



Library of The
Saturday
Afternoon Club

1883

STANDARD
ELECTRICAL WORKS

Successors to

ELECTRICAL DEPARTMENT

OF

Post & Co.



MANUFACTURERS OF
And DEALERS IN

ELECTRICAL GOODS

SOLE MANUFACTURERS OF

"Post's" Magneto Bells,

SWITCH BOARDS,

TELEPHONIC APPARATUS,



OFFICE, S. W. COR. PEARL & ELM STS.

CINCINNATI.

Rob't T. Morris, Print, No. 65 Vine St., Cincinnati.

TERMS TO PURCHASERS.

Orders for goods sent C. O. D. must be accompanied by one-third the amount of bill, or good satisfactory reference as to responsibility of purchaser given.

Remittances should be made by Draft, Money Order, or Registered Letter.

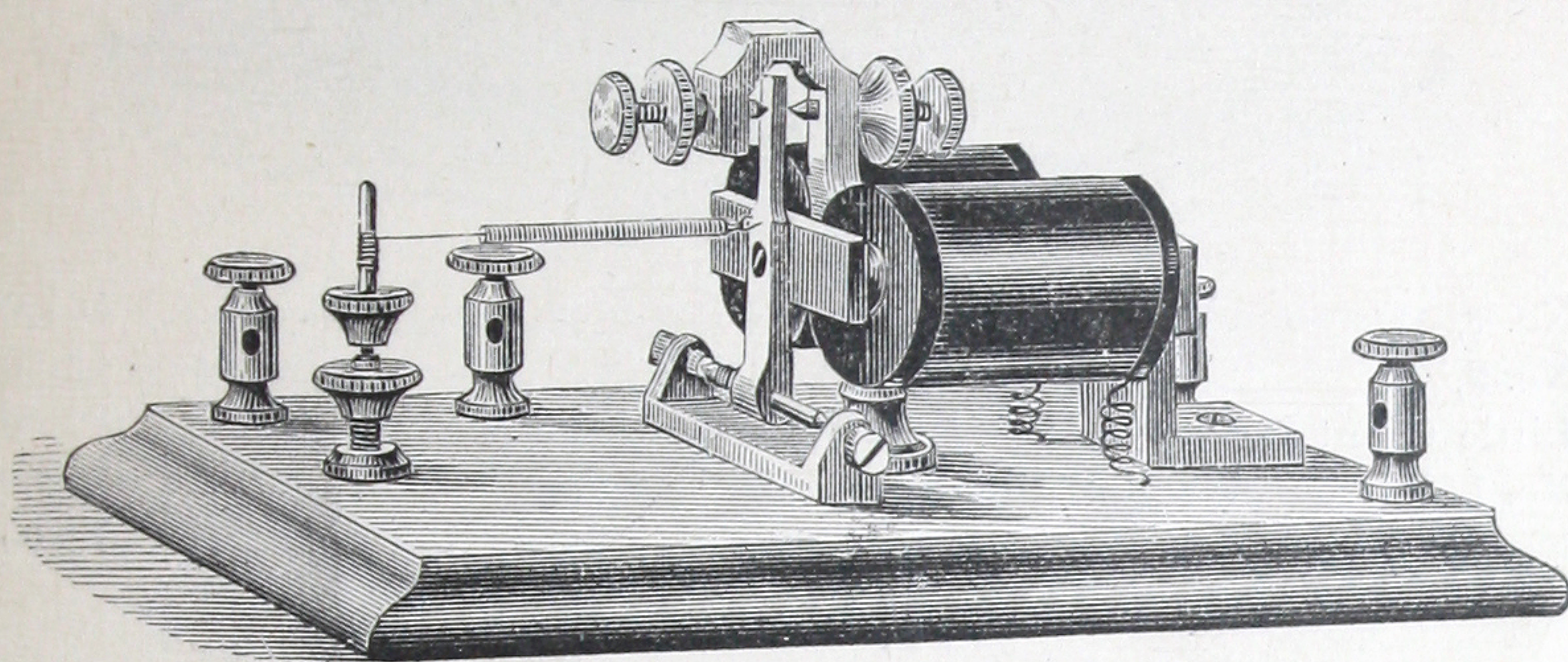
While it is generally safe to send small amounts in currency or stamps through the mails, we will not hold ourselves responsible for losses incurred in this manner.

A cash discount of ten per cent. will be made to parties sending us the catalogue price, on Instruments, Office and Magnet Wire and Tools.

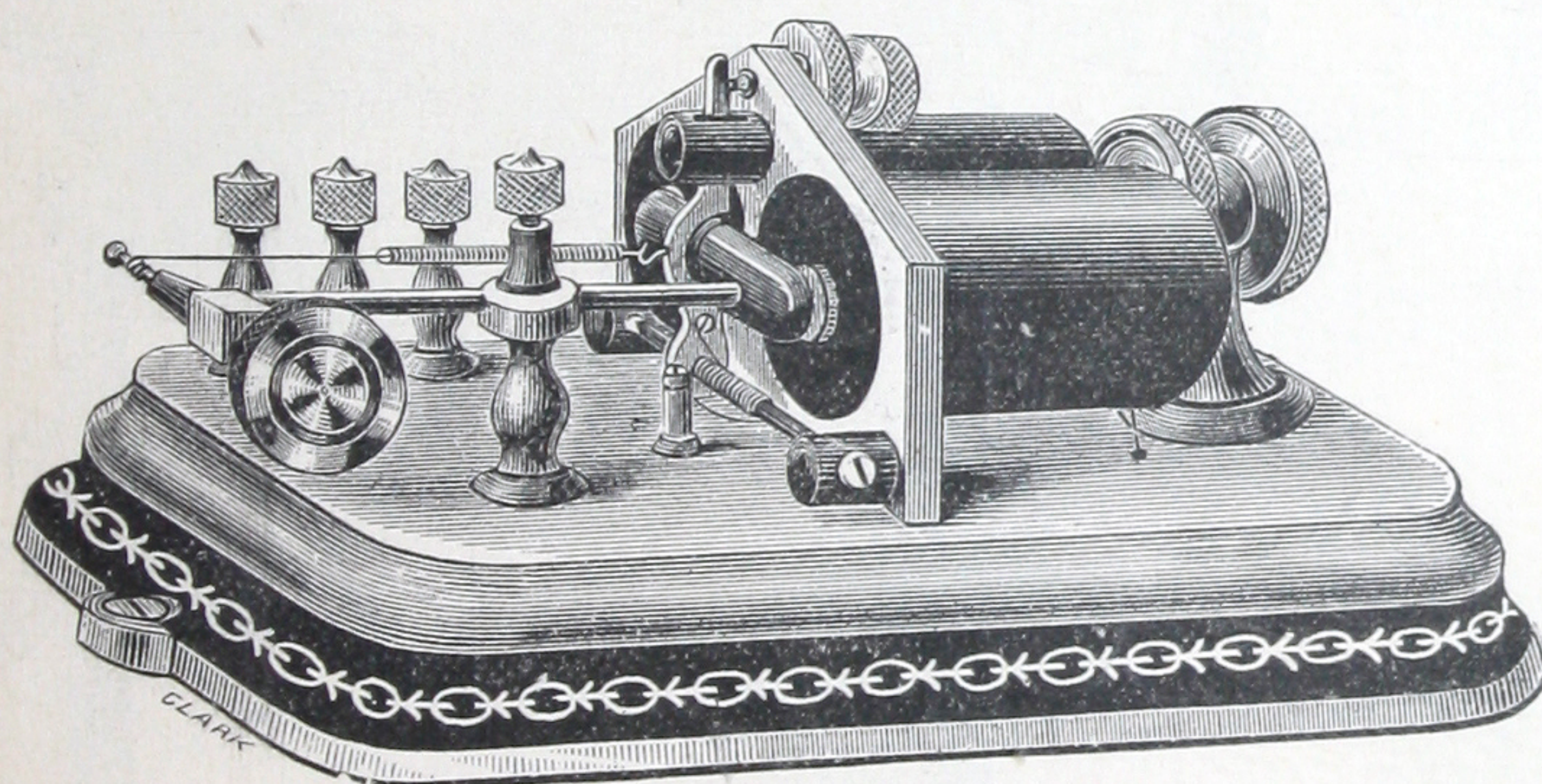
Those sending us orders from a distance will have their orders as promptly and satisfactorily attended to as though ordered in person.

Relays.

Our No. 1 Relays are finely finished and mounted on Polished Rose-wood Bases, with polished Rubber-covered Magnets, wound with best fine insulated Copper Wire, having Soldered Connections and firm Nut Fastenings throughout and the latest improved Extension Adjustments. They are accurately measured, and the Resistance stamped on the Base.

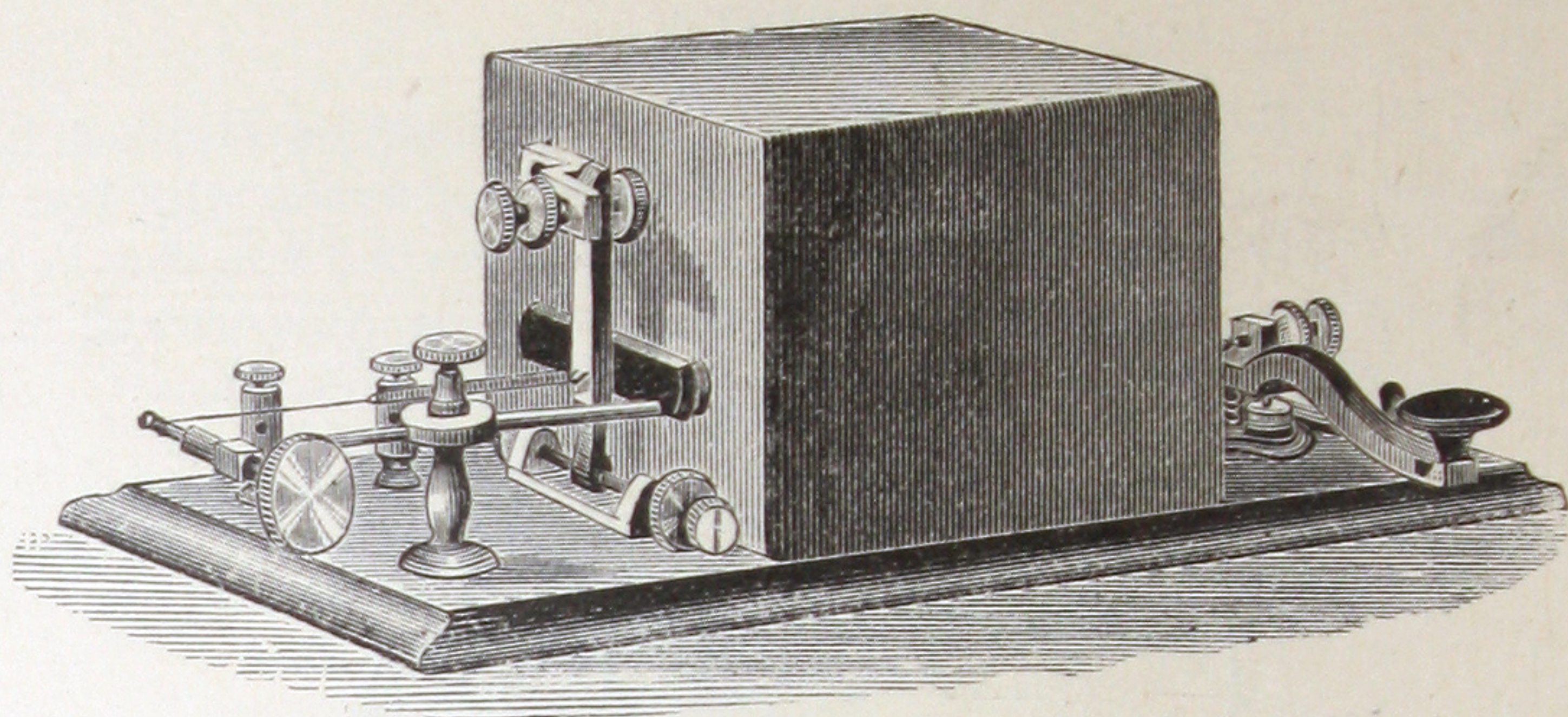


No. 1, low resistance,	50 to 100 Ohms,	-----	\$11 00
No. 1, standard "	110 to 160 "	-----	12 00
No. 1, " "	160 to 300 "	-----	15 00
American Union Relay,	150 "	-----	8 00
Pony Relay Resistance,	20 to 50 "	-----	5 00
" " "	60 to 100 "	-----	6 00



Western Union Relay, No. 1.	150 to 200 Ohms,	-----	11 00
" " " " 2,	150 "	-----	8 50
No. 1, Box sounding, any resistance		-----	12 00
No. 2, " " " "		-----	9 00

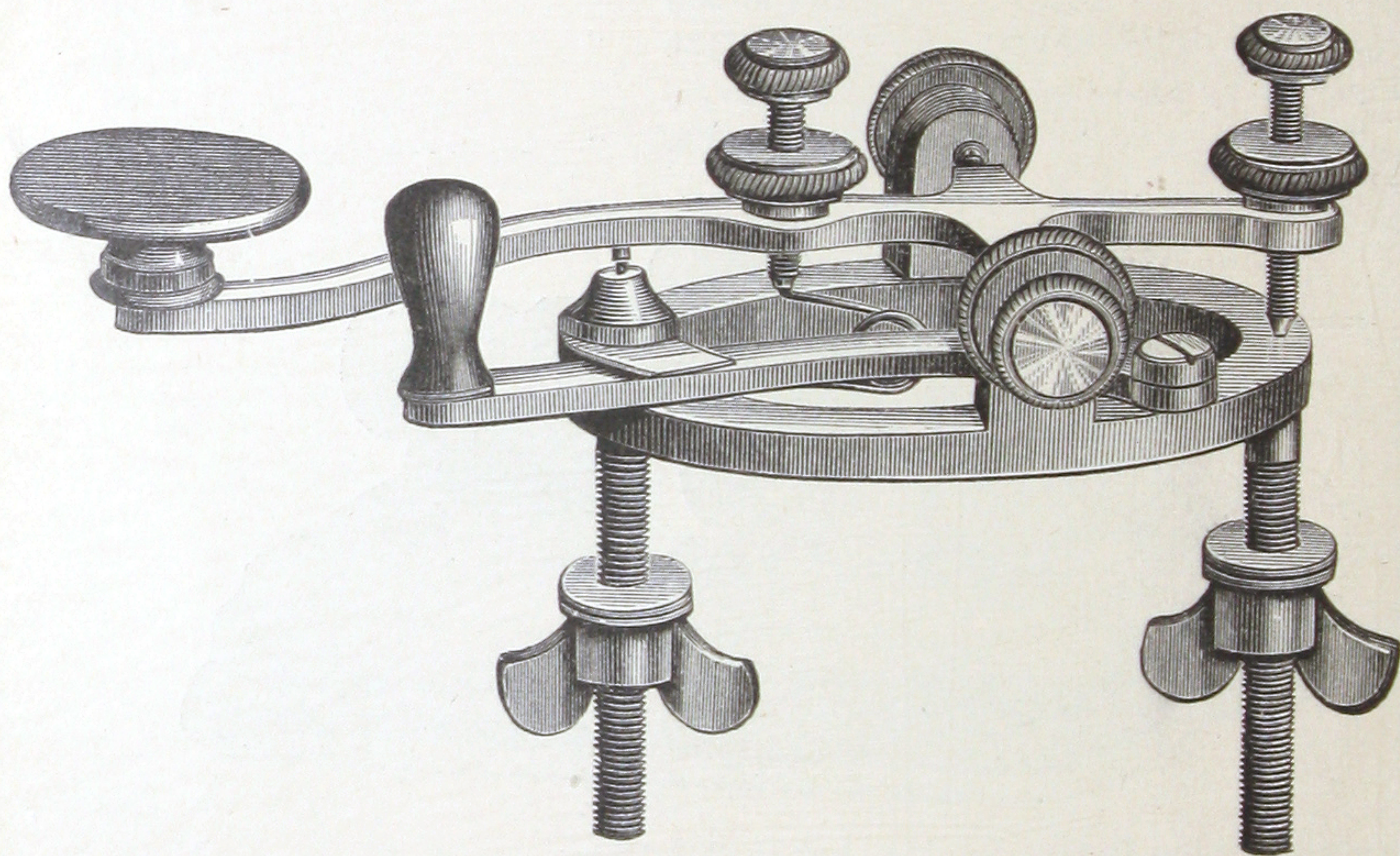
ID 90-35644 TCF



No. 1, Box Sounding, K. O. B., any resistance-----	16 00
No. 2, " " " " "-----	12 00
Little Giant Pocket Relay, $2\frac{1}{2} \times 2\frac{3}{4} \times 5\frac{3}{4}$ -----	16 00
No. 1, Nickle plated, hard rubber case, $1\frac{1}{4} \times 2\frac{1}{2} \times 5$ -----	15 00
No. 2, " " " " " $1\frac{1}{4} \times 2\frac{1}{2} \times 5$ -----	12 00

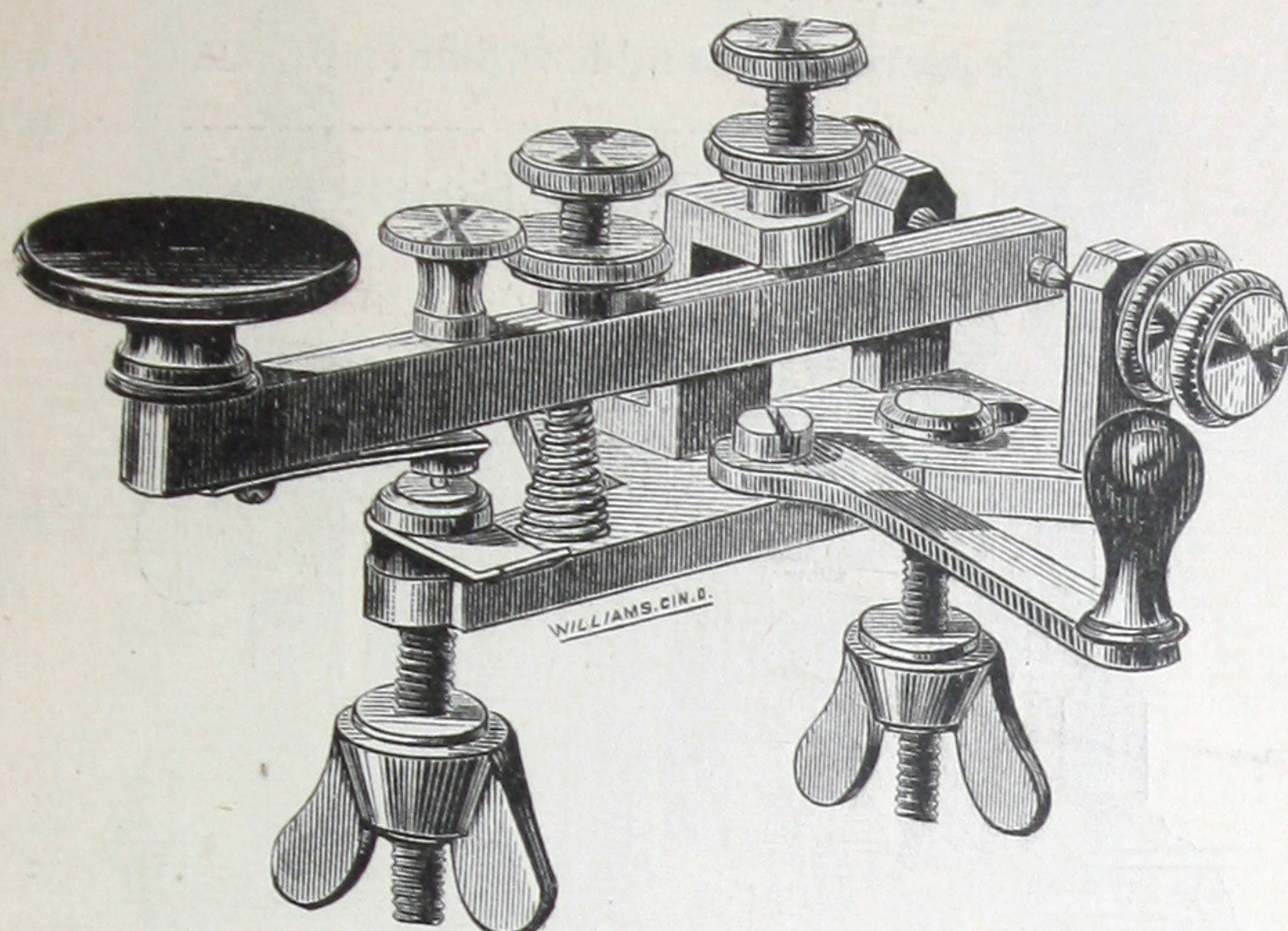
Keys.

J. H. BUNNELL'S PATENT, FEB. 15, 1881.



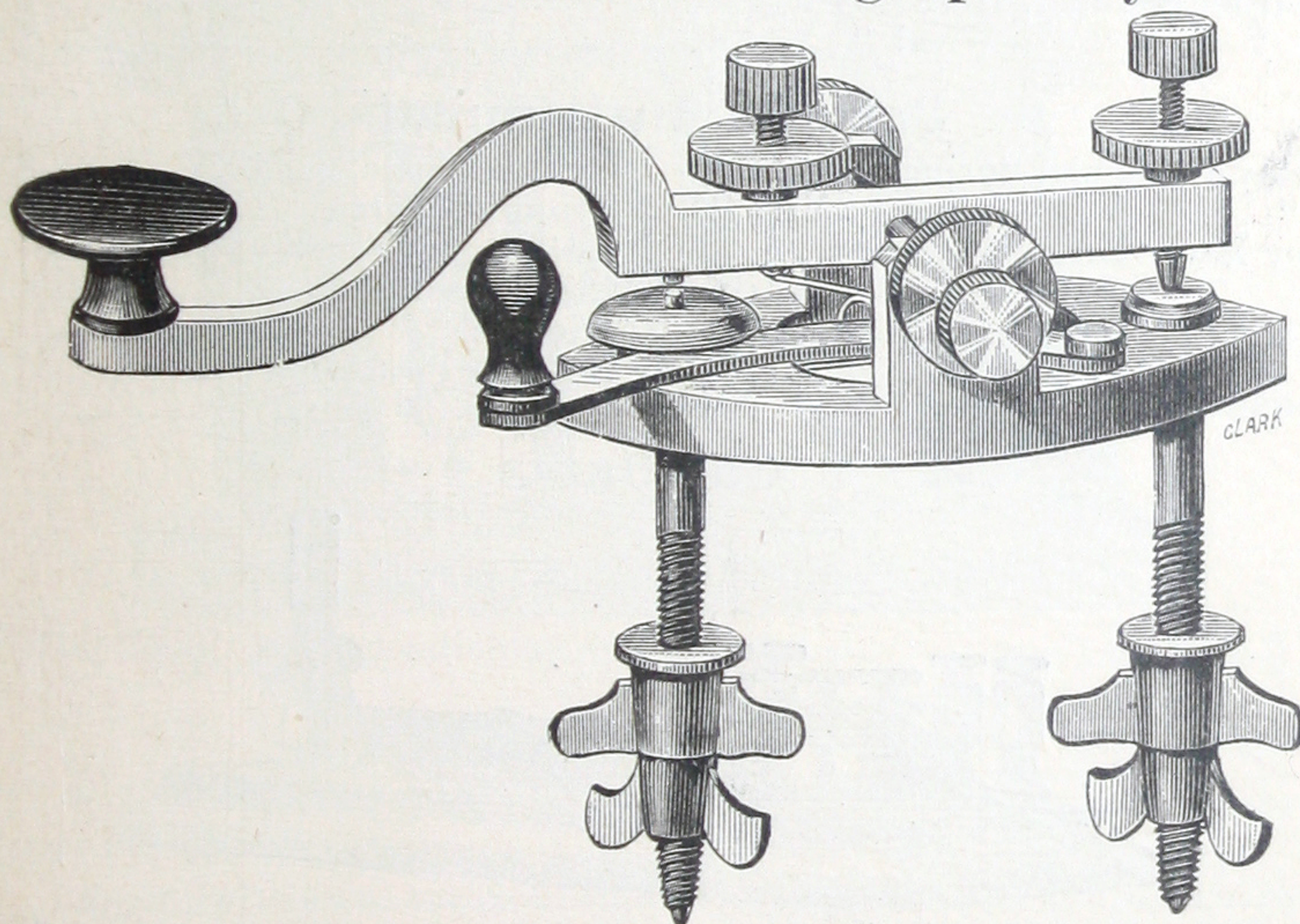
Steel Lever, Solid Trunnion-----	Price, \$3.00
" " " " legless-----	" 3.50

Adapted for fast work. Will send by mail, postpaid, at above price.

The Boss.**PATENT ELASTIC CONTACT KEY.**

Prevents cramp and renders sticking impossible. Operators find it a pleasure to write with it. The circuit breaker Switch is constructed to prevent the accumulation of dirt. The back Leg is adjustable so as to fit in table holes of any other Key. The contact can be changed while the Key is in use. The points can be cleaned without altering adjustment.

Price ----- each, \$3.50

Post & Co. Standard Telegraph Key.

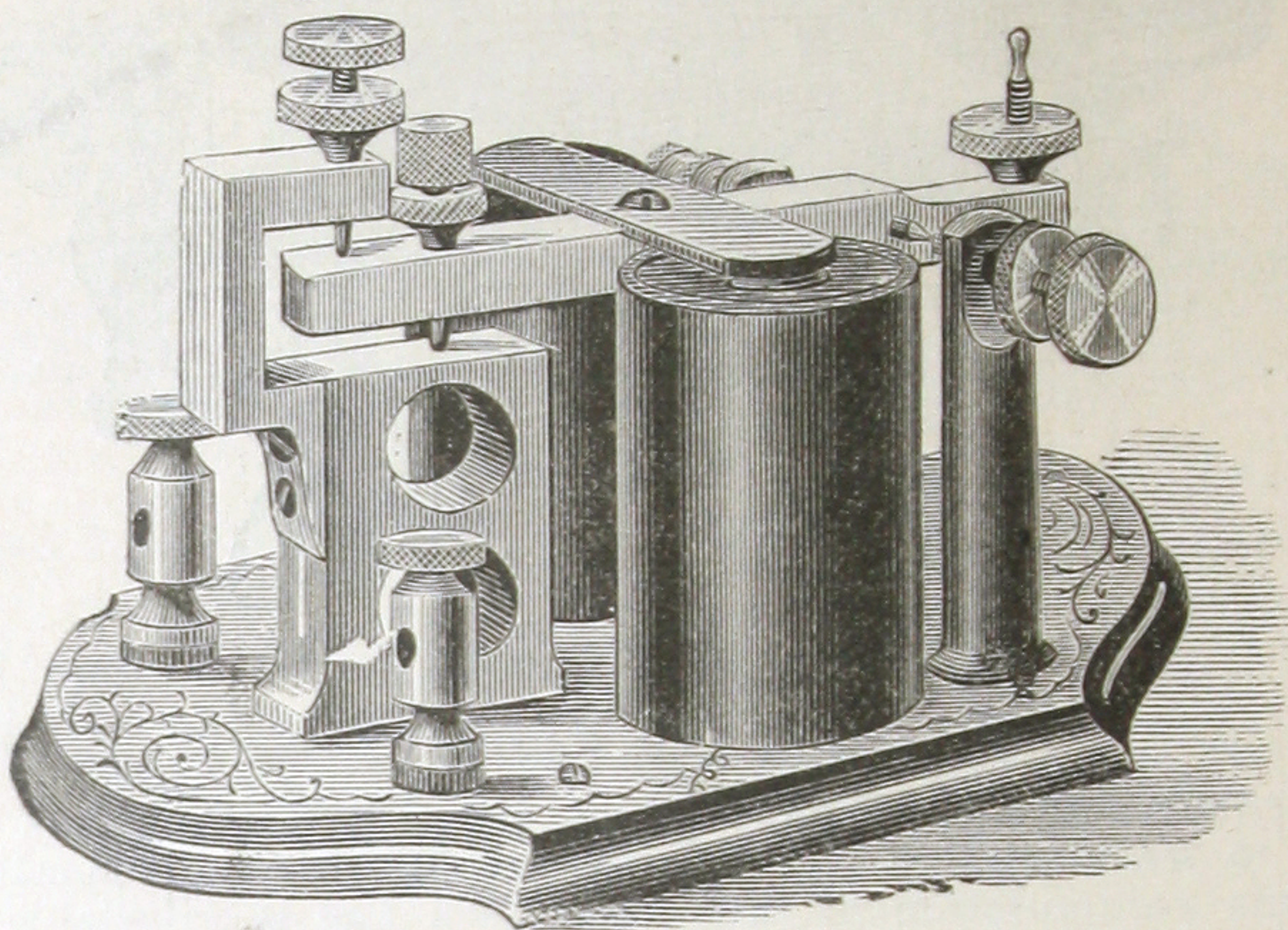
Especially adapted to Railroad use-----	\$3 50
Iron Key, Platina Points, Rubber Knobs-----	2 00
No. 5, Brass Key, curved or straight Lever-----	2 50

Improved Top Connection Key.

Can be connected for use on desk or table without mutilating the wood work.

Price ----- each, \$3 00

Improved Pony Sounder.

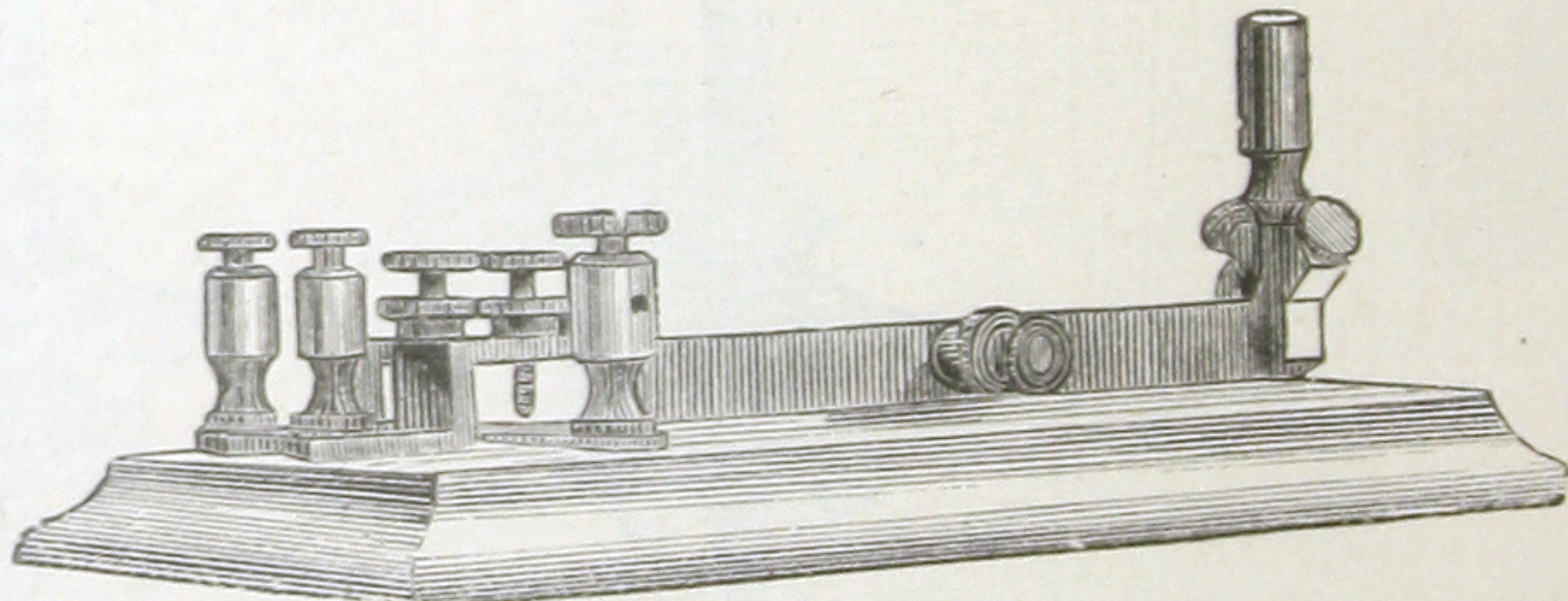


Improved Giant, perfected	\$5 50
No. 1, Large size	5 00
No. 2, Small or Pony Giant	4 00
No. 2, Pony Sounder	3 50
Learner Sounder, Iron Base	2 25
“ “ Wood “	2 00

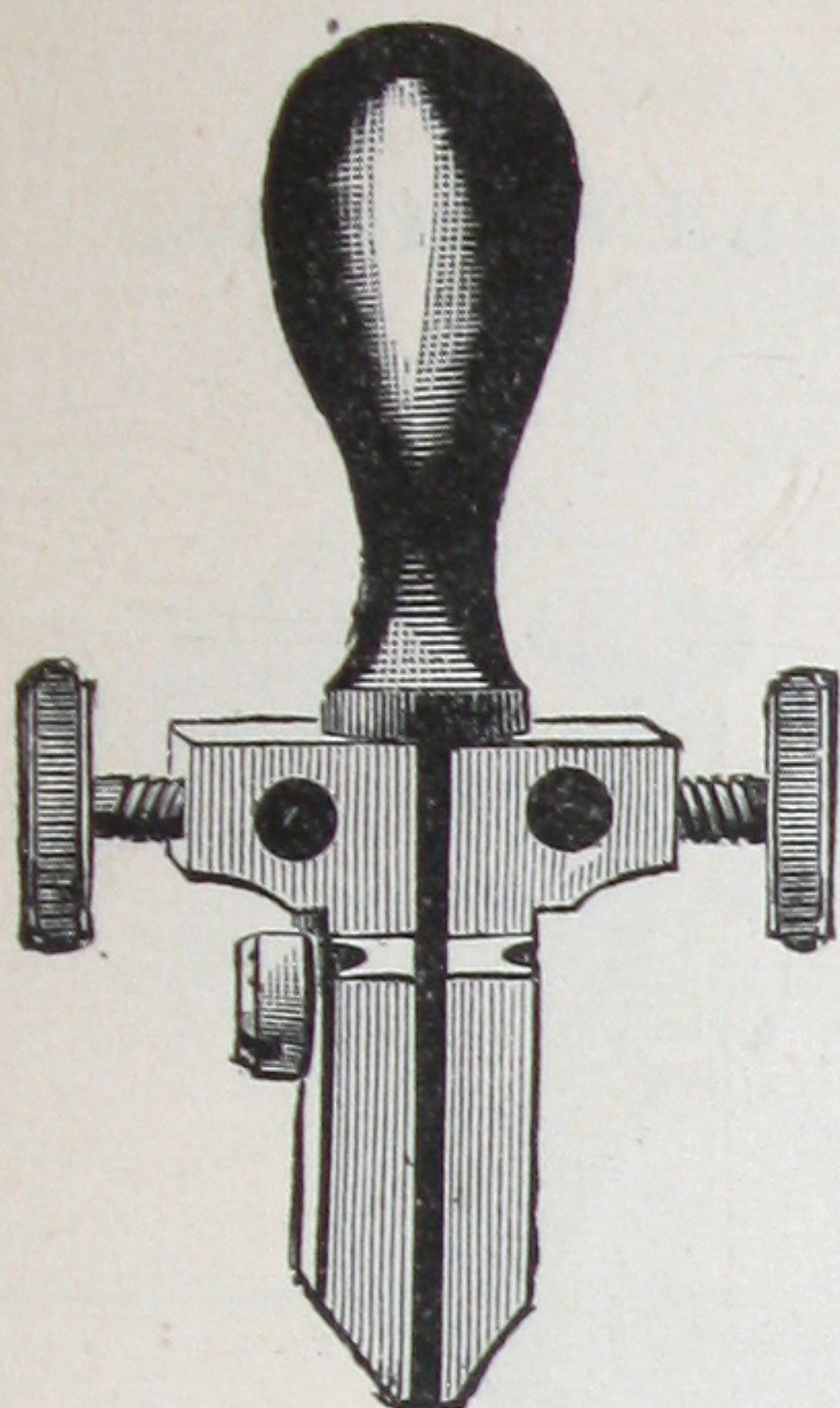
Parts of Instruments.

Relay or Sounder Springs	ea. \$ 10	Circuit Closer Knobs	\$ 8
“ “ “ pr. dz.	60	Trunnion Screw	20
Key Lever Knobs	20	Adjustment Screw and Nut ..	20
“ “ soft rubber	75	Platinum Points	20
“ “ Knob Covers	50	Iridium “	50
(Prevents cramp.)		Binding Post, large	25
Circuit Closer, complete	30	“ “ small	20

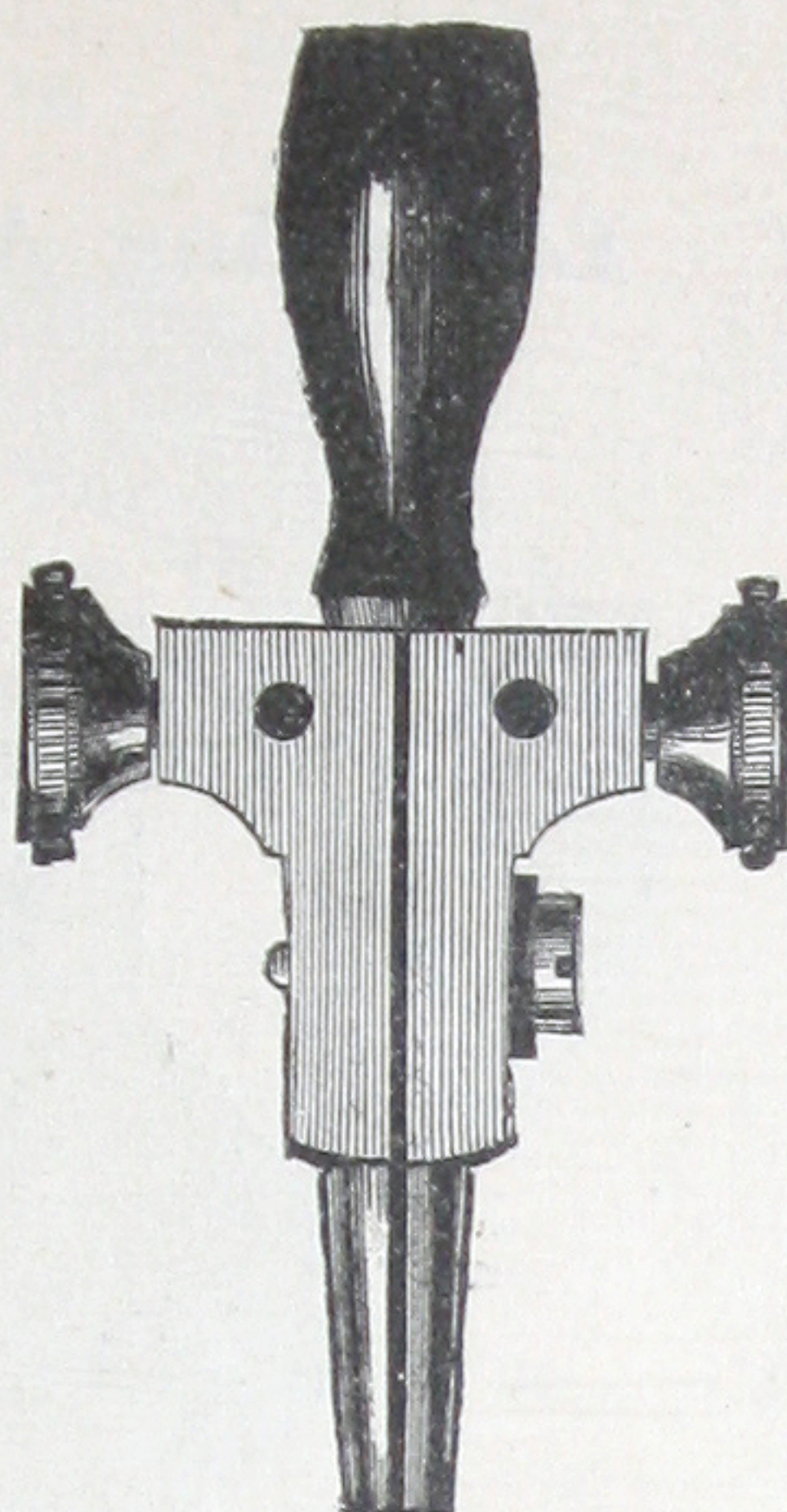
Cut Outs.



Cut Out, with Plug, single	\$2 50
“ “ “ double	5 00
“ “ Plug, with Lightning Arrester and Ground Switch	4 25



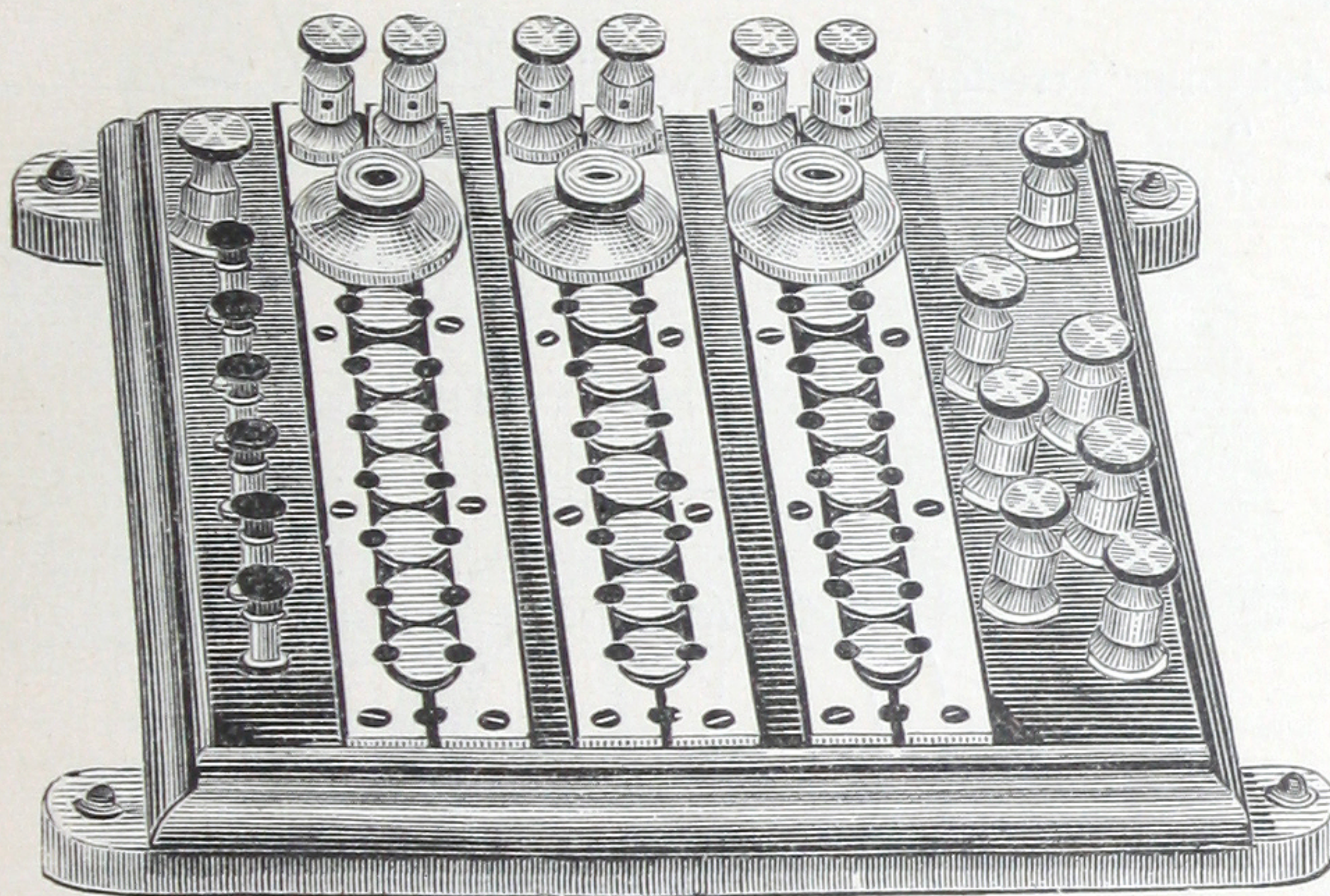
LOOP PLUG FOR CUT OUT.



LOOP PEG FOR CUT OUT.

Plugs, for Cut Outs	-----	80
Pegs, " "	-----	25
Switch Loop Plug	-----	1 00

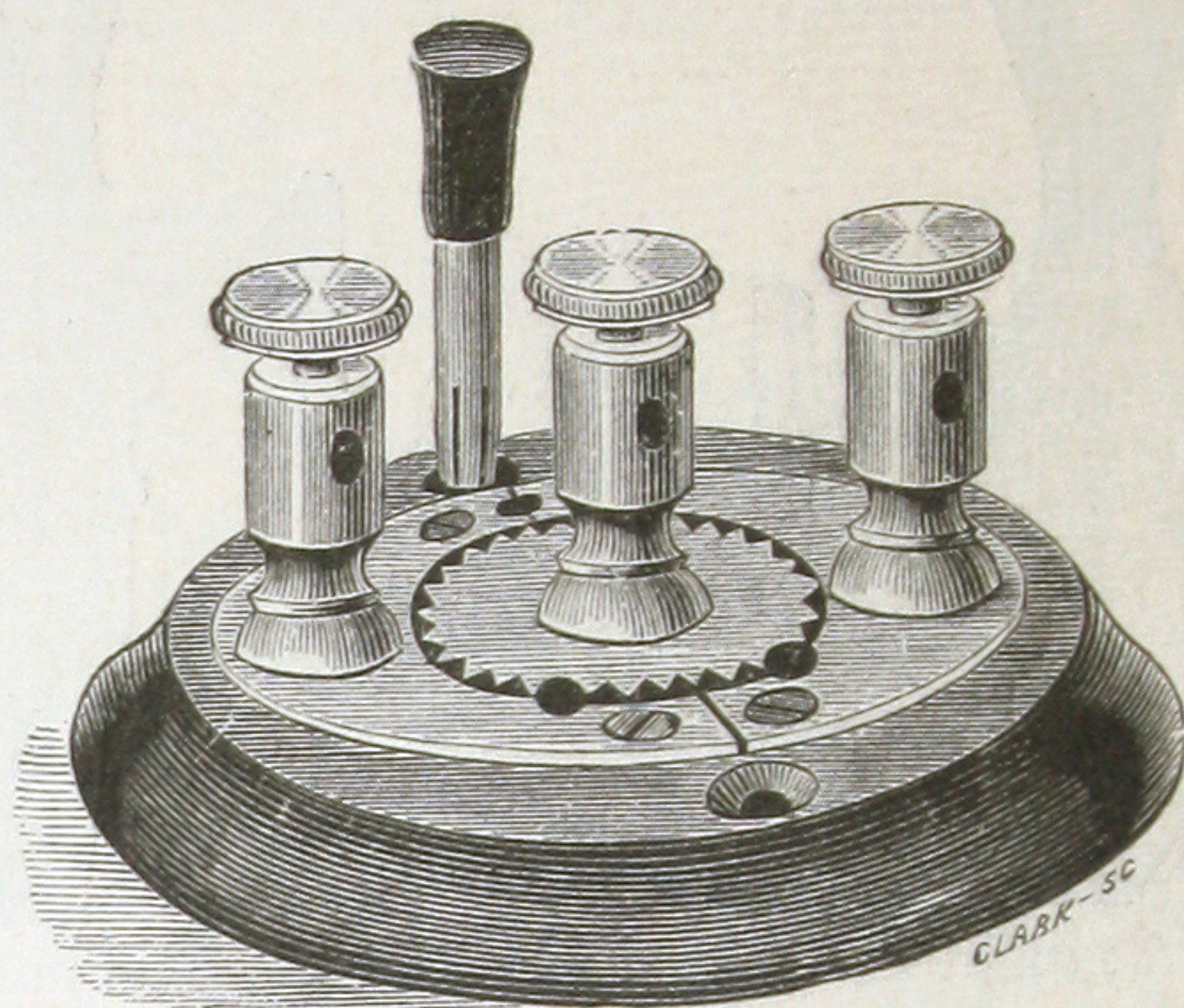
Western Union Pin Switch.



1, Wire Way, 2, Perpendicular Bars	-----	\$ 3 50
2, " " 4, " "	-----	7 00
3, " " 6, " "	-----	11 00
4, " " 8, " "	-----	15 00
5, " " 10, " "	-----	20 00
Extra Pins	-----	25

Larger Switches to accommodate any system of wires furnished at short notice. The above Switches all have the improved Disc Lightning Arrester, which adds greatly to their practical use and convenience as well as to their beauty.

Lightning Arresters and Switches.

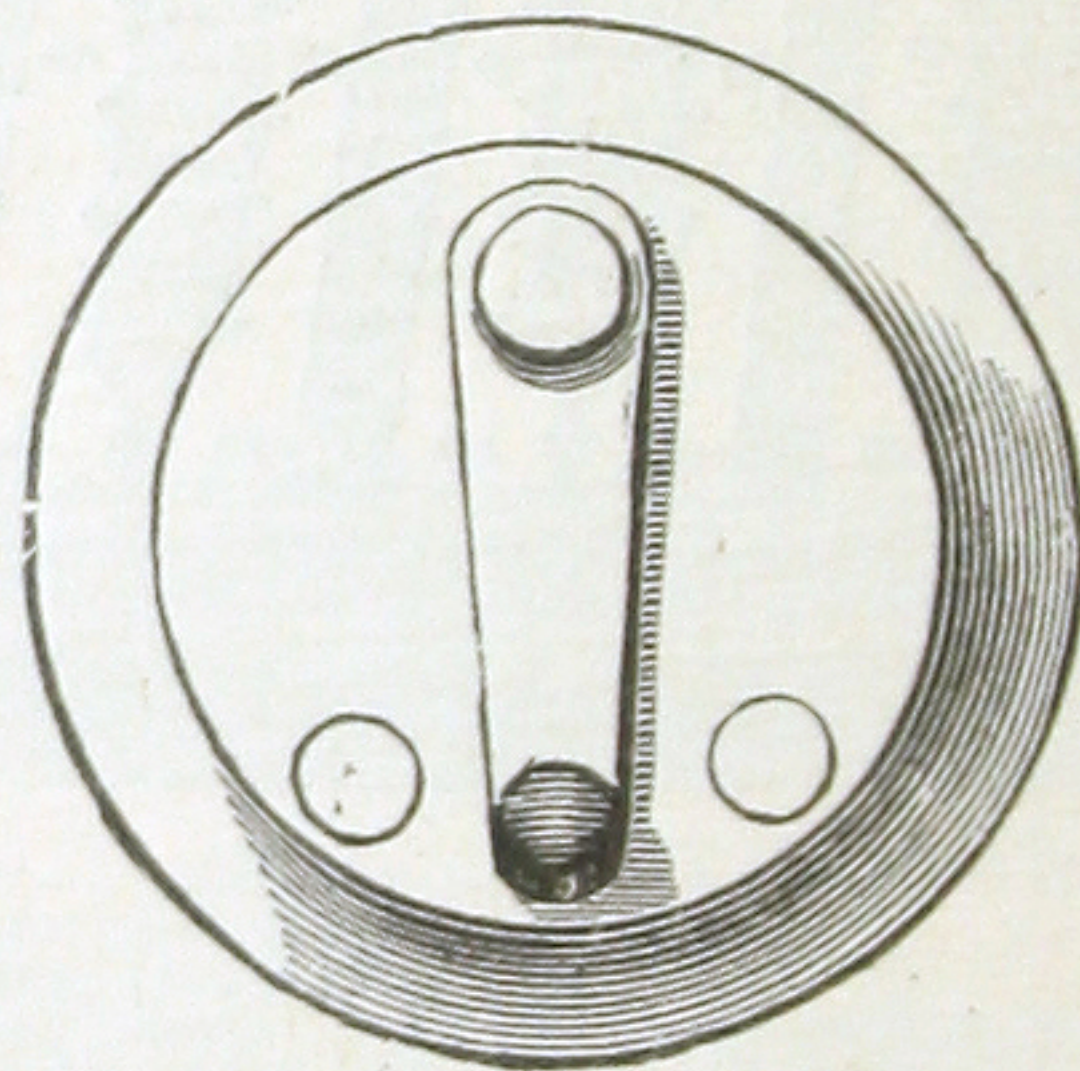


Excelsior-----\$1 00-

This is a perfect Lightning Arrester, and is especially adapted to short Telegraph Lines.

No. 1, Lightning Arrester, with heavy plates-----	\$2 50
No. 2, " " Disc pattern-----	1 20
No. 3, " " Plain plate-----	1 00

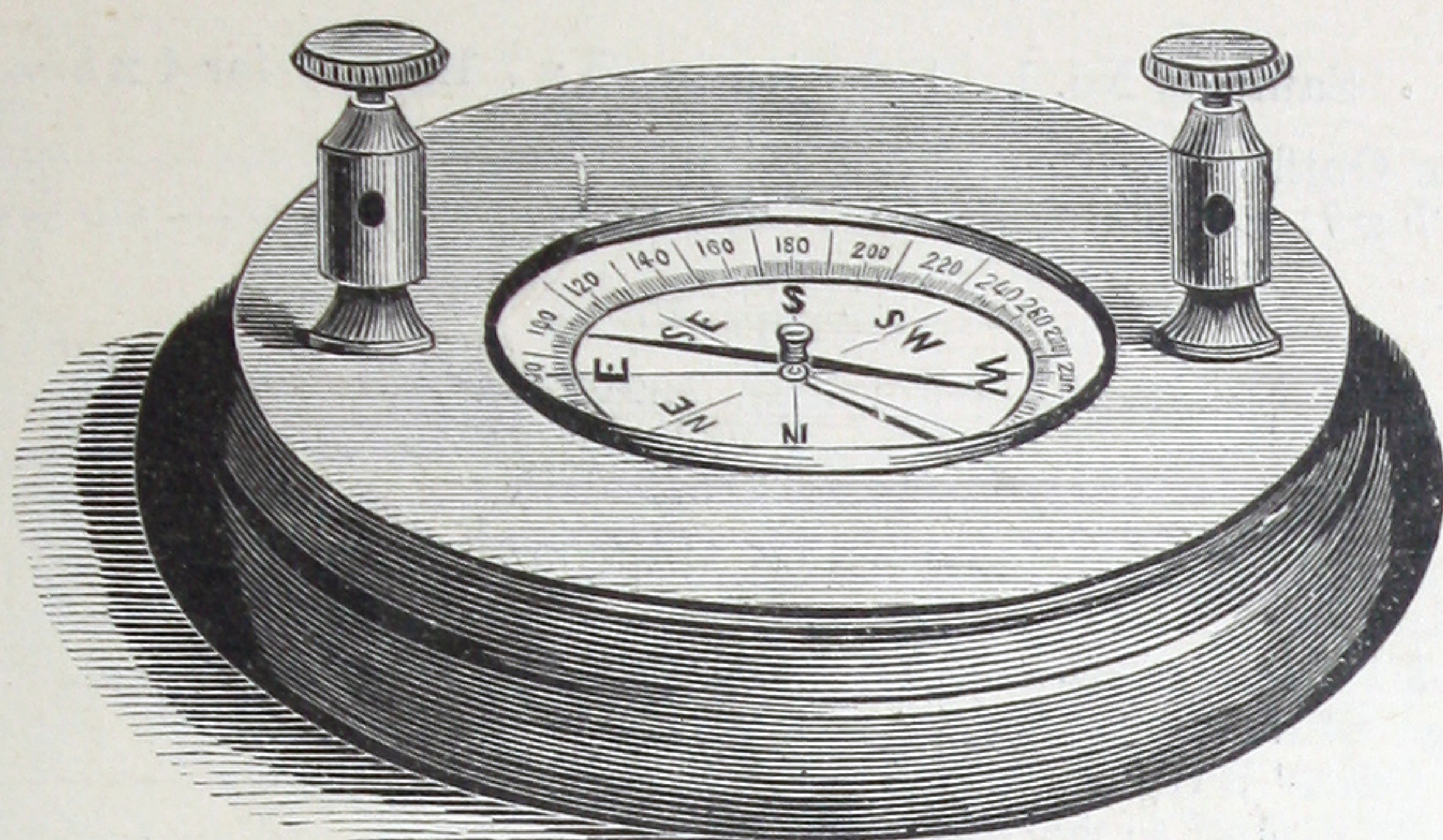
Circuit Switches.



WOOD BASE.		PRICE.	HARD RUBBER BASE.		PRICE.
1, Connecting Point-----		\$ 50	1, Connecting Point-----		\$ 80
2, " Points-----		55	2, " Points-----		90
3, " " -----		60	3, " " -----		1 00
4, " " -----		75			

Quick Switch-----\$5 50

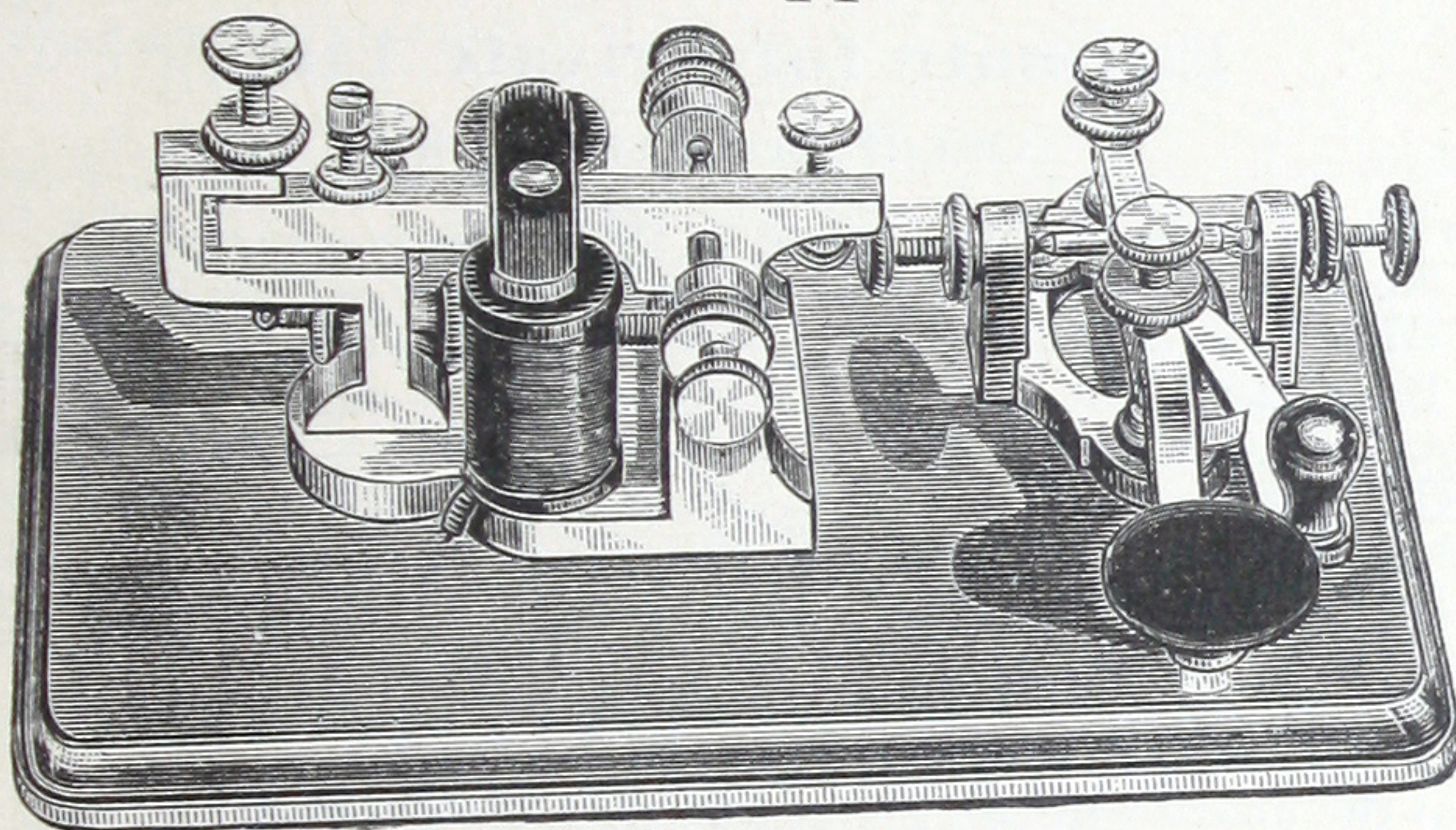
Galvanometers.



Detector Galvanometer, horizontal	-----	\$4 00 and \$ 6 00
“ “ vertical	-----	12 00
Differential “	-----	30 00
Universal “	-----	65 00

Prices furnished for Galvanometers and Rheostats on application.

Learners' Apparatus.



Here we make a specialty, and in order to meet the demands of all, we quote prices on Instruments of all grades.

(In ordering, please state what Outfit is desired.)

OUTFIT No. 1.

Price, complete	-----	\$4 50
-----------------	-------	--------

This Outfit consists of the following, which can be had separately at prices annexed.

1 Learner, with Brass Adjustment, Rubber Covered Coils	-----	\$3 50
1 4 x 5 Gravity Battery Cell, complete	-----	65
1 Book of Instruction	-----	25
1 Package Blue Vitriol	-----	10
$\frac{1}{2}$ Pound Office Wire	-----	25
Instrument above wound to work on long lines	-----	4 50

OUTFIT No. 2.

Same as No. 1. Substituting 5 x 7 Battery for 4 x 5.

Complete Outfit-----	\$5 00
Battery, 5 x 7, complete-----	90

OUTFIT No. 3.

Price, complete-----	\$7 50
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PRICE OF PARTS.

1 All-Brass Instrument, mounted on Mahogany Base-----	\$6 00
1 5 x 7 Gravity Battery Cell, complete-----	90
1 Book of Instruction-----	25
1 Package Blue Vitriol-----	10
$\frac{1}{2}$ Pound Office Wire-----	25
Instrument wound to work on long lines-----	7 00

OUTFIT No. 4.

Same as No. 3. With Nickel Plated Instrument.

Price, complete-----	\$8 50
Instrument to work on long lines-----	7 00

Estimate for Private Line,

ONE-HALF MILE LONG.

2 No. 1 Instruments, wound with fine Wire-----	@ \$4 50—\$9 00
$\frac{1}{2}$ Mile No. 12 B B Galvanized Iron, 85 lbs.-----	@ 9— 7 65
15 Pony Glass Insulators-----	@ 5— 75
15 Oak Brackets-----	@ 3— 45
5 Cells Gravity Battery-----	@ 1 00— 5 00
2 Lbs. Office Wire-----	@ 60— 1 20
4 Window Tubes, with Binding Posts-----	@ 25— 1 00
12 Lbs. Blue Vitriol-----	@ 10— 1 20

It is also best to use Cut Outs and Lightning Arresters. We will furnish these combined at \$1.00 each.

From the above you can get at the cost of longer lines with more or better Instruments, by figuring on the cost of Instruments, Wire, Brackets, Insulators and Battery.

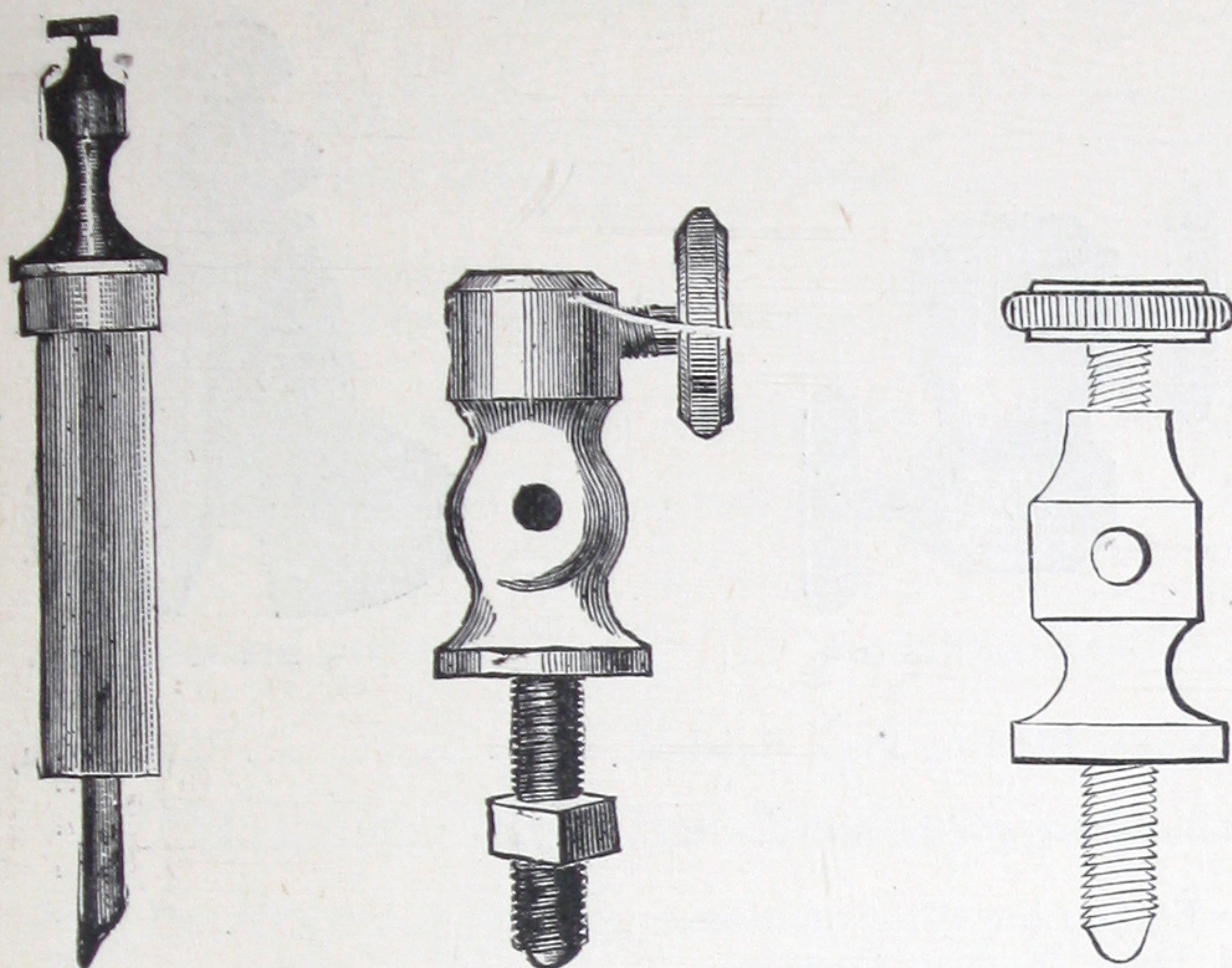
Improved Short Line Combination Set.

Improved Giant Sounder, with Legless Key, mounted on same base, either polished walnut, cherry or mahogany, price-----	\$8 00
Sounder, separate-----	5 00
Key "-----	3 00

These Instruments will always bring a good price second-hand, and can be used on any telegraph line.

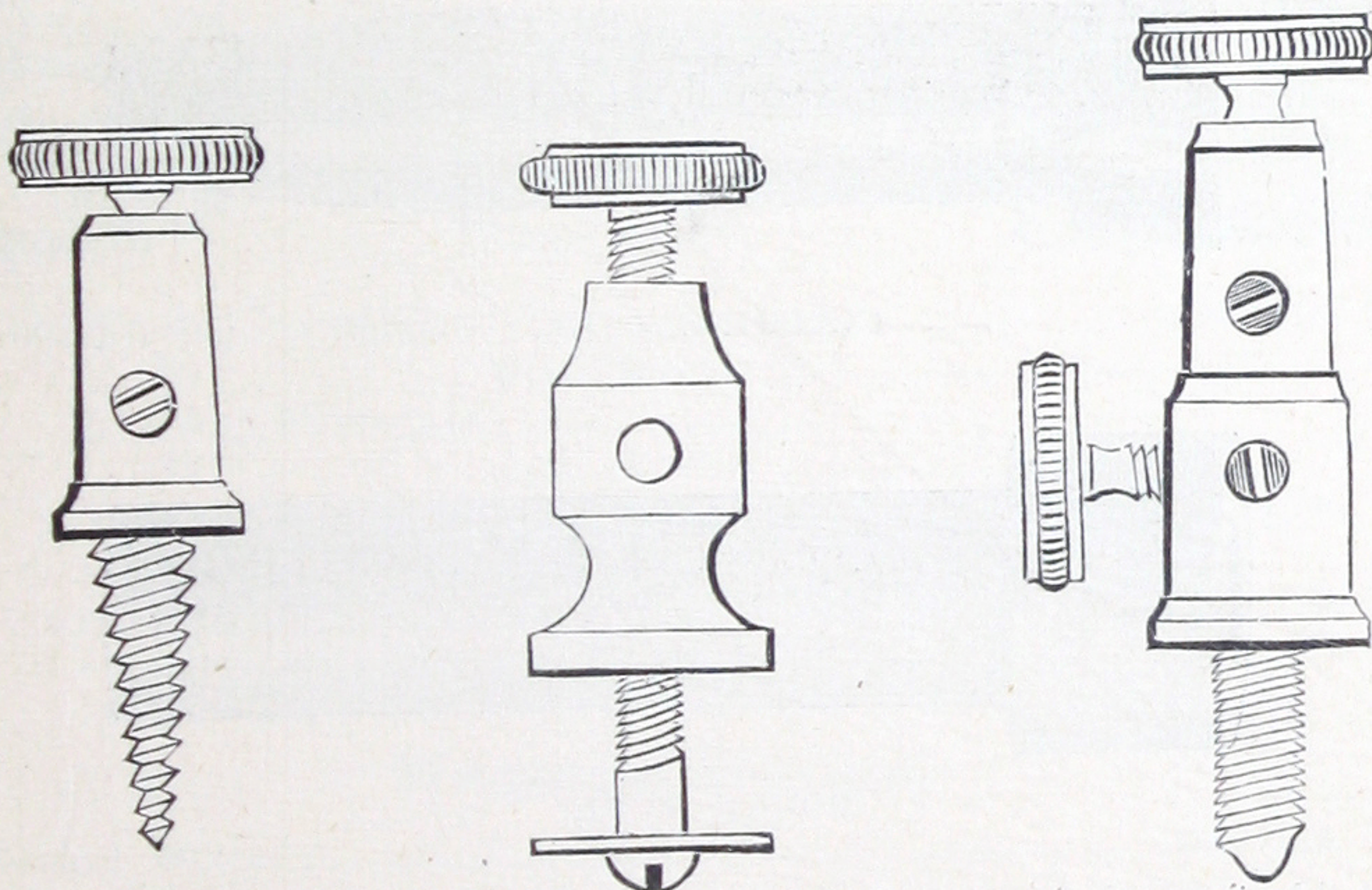
We will make a reduction to parties forming clubs, to proprietors of telegraph schools or operators.

Binding Posts.



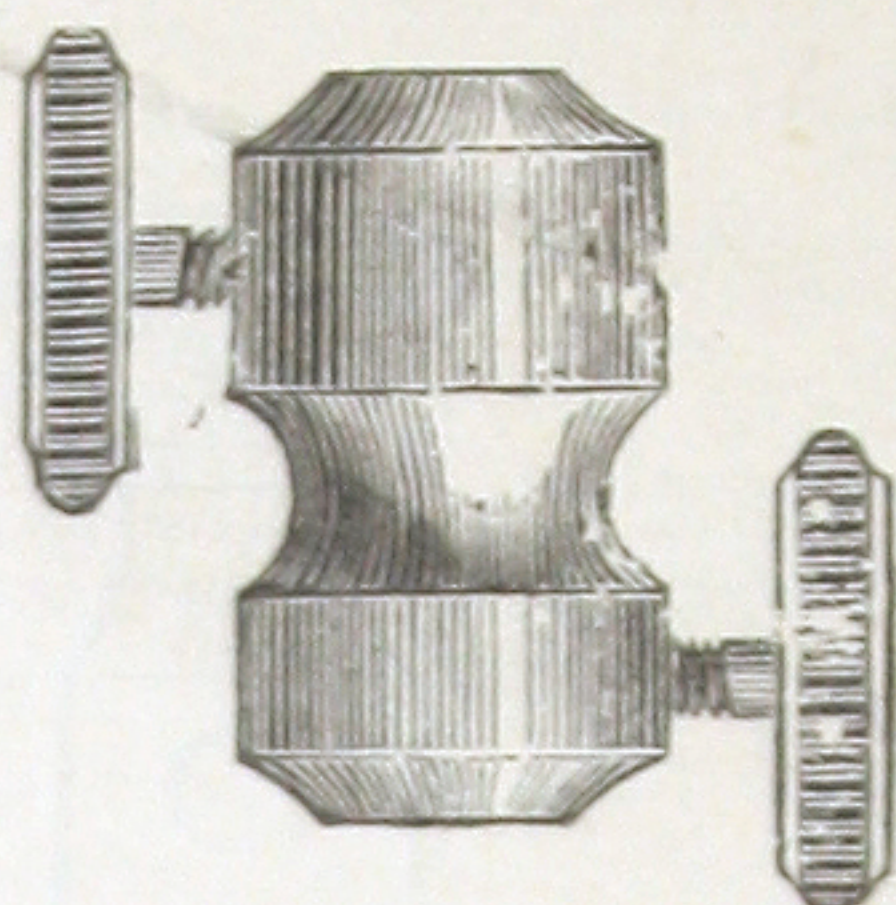
WINDOW TUBE & BINDING POST.

Instrument Nos. 1, 2, 3, 4 and 5	-----	each, \$0	15
“ Wood Screw, finished	-----	“	15
“ “ “ plain	-----	“	12

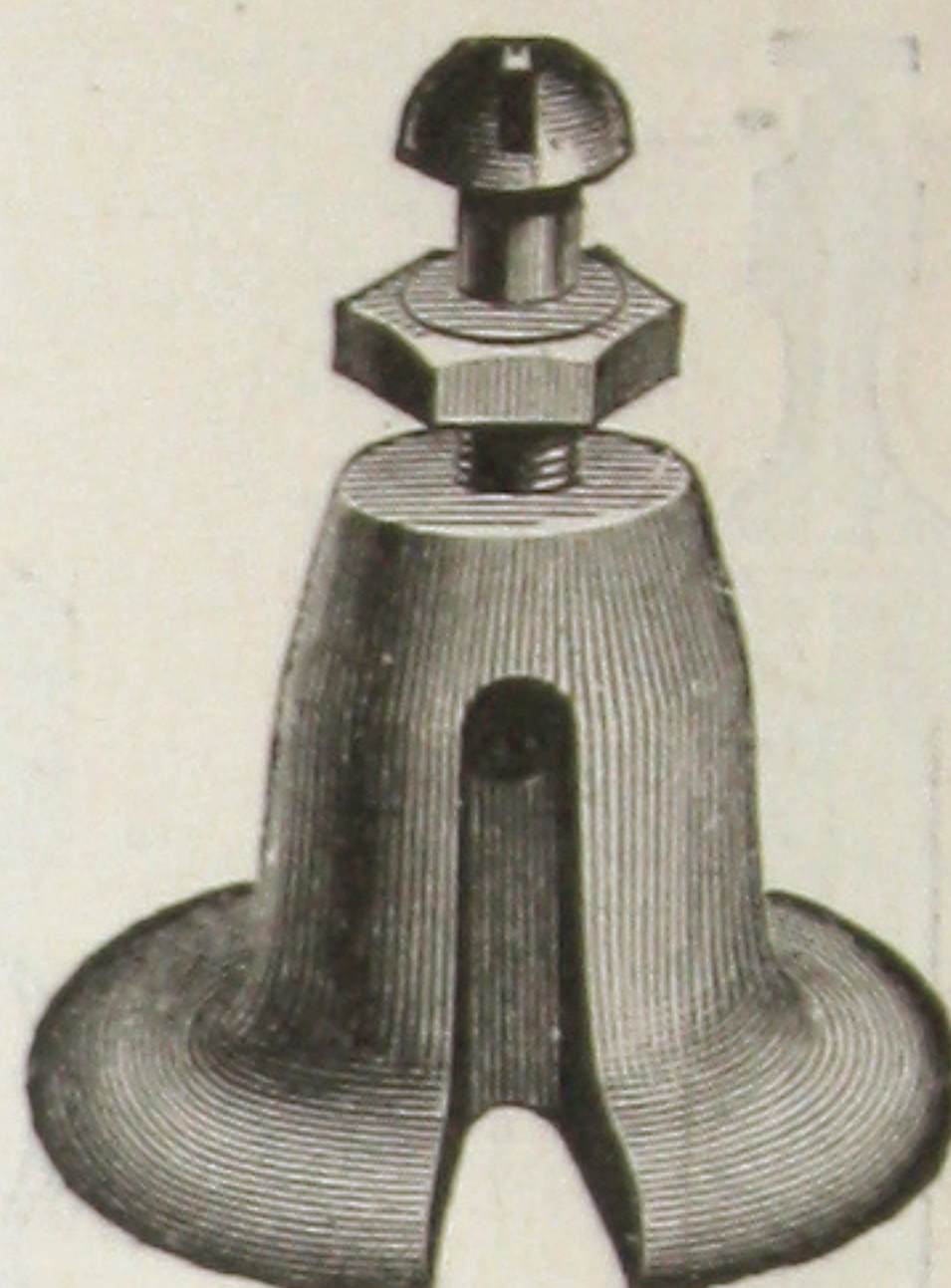


Instrument, double, plain, large	-----	each, \$0	20
“ “ finished, small	-----	“	20

Binding Posts.



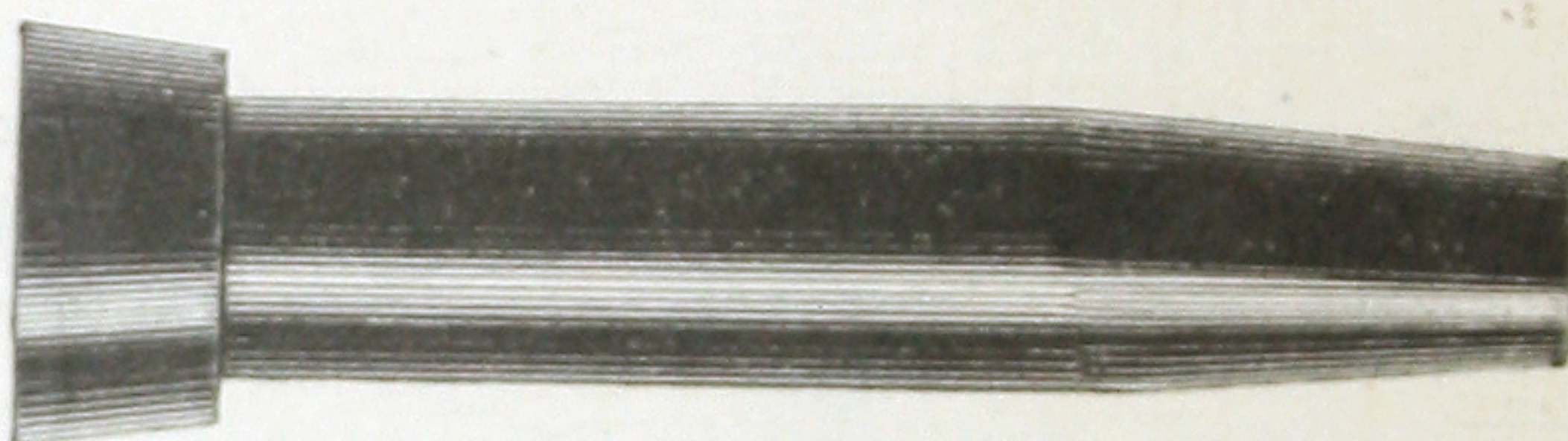
DOUBLE CONNECTOR.



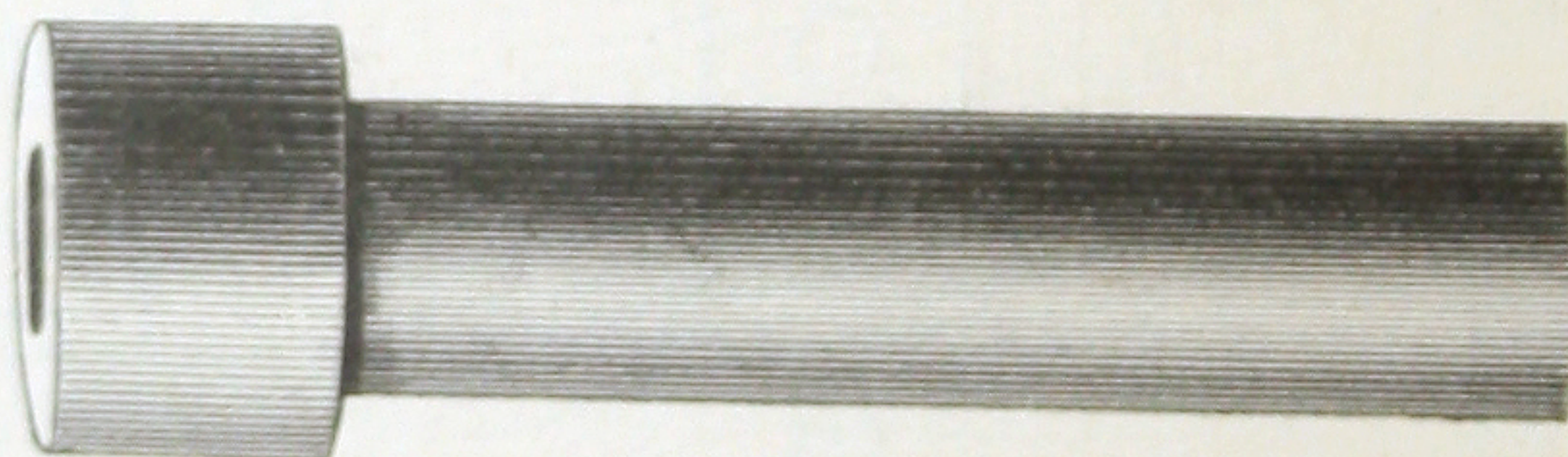
WINDOW BINDING POST.

No. 1, Double Binding Post, finished	-----	each, \$0	30
No. 2, " " " "	-----	"	25
Single Connector, plain, finished	-----	"	8
Double " " "	-----	"	15
Electric Light Line Wire Connector	-----	"	10
Window Tube Binding Posts	-----	"	25
Binding Posts for Electric Light and Plating Machines	-----	"	75
Office Wire Cleats from 2 to 20 wires	-----	per wire,	02
" " Staples, steel	-----	" gross,	10

Window Tubes.

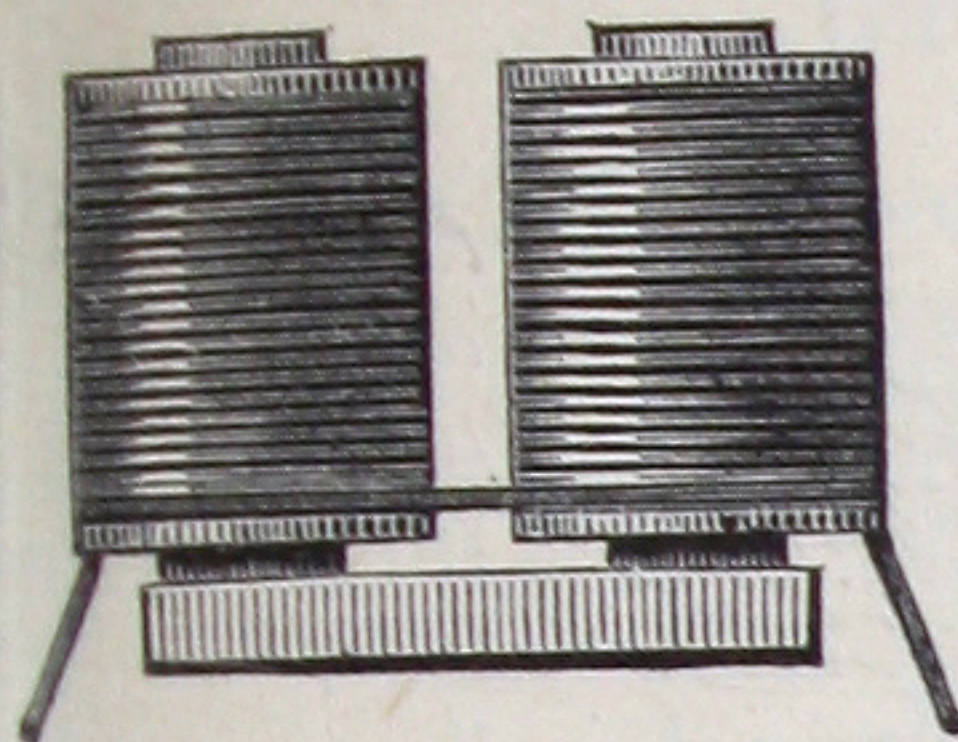


FINISHED TUBE.



ROUGH TUBE.

Hard Rubber, 2½ inch, with head, rough	-----	each, \$0	07
" " 3 " " " "	-----	"	08
" " 4 " " " "	-----	"	10
" " 24 " without " "	-----	"	40

**Electro Magnets.**

No. 1, Giant Sounder Coils, Rubber covered	-\$2 25
No. 2, " " " " "	2 00
No. 3, " " " " "	2 00
Pony Sounder Coils	1 75
Relay Coils, 50 to 100 Ohms	6 00
" " 100 to 600 "	5 50
Common " 50 "	75

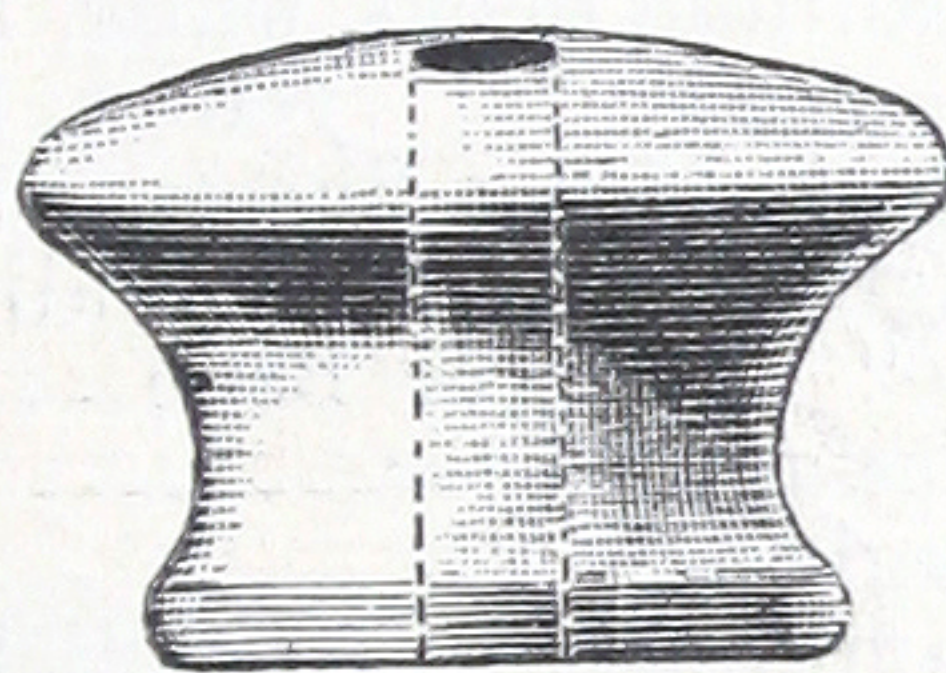
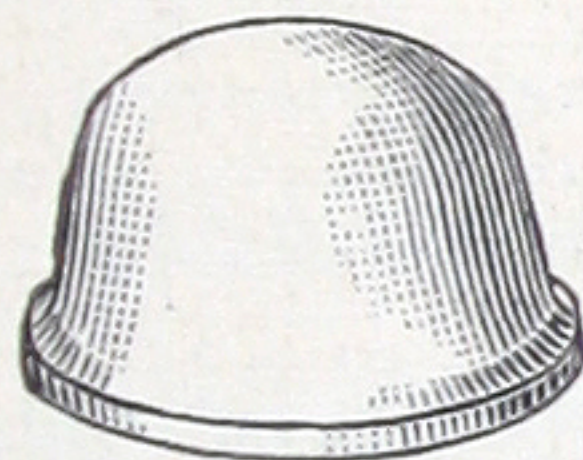
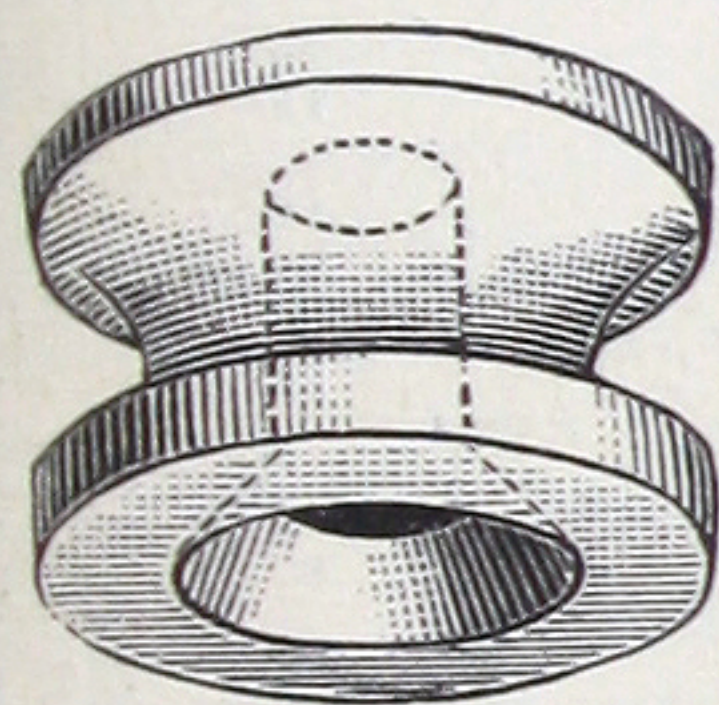
Coils of all kinds, and experimental work done promptly, at low figures.

Horse Shoe Magnets.

2 inch	\$ 10	6 inch	\$ 60
2½ "	12	7 "	80
3 "	15	8 "	1 10
3½ "	20	9 "	1 50
4 "	25	10 "	2 00
5 "	40	12 "	2 75

Magneto Machine Magnets.

Magneto Machine Magnets, 4 inch	each, \$0 75
" " " 6 "	" 1 50
" " " 8 "	" 1 75
" " " 9 "	" 3 00
" " " 10 "	" 4 00

Office Wire Knobs, Staples, etc.

Office Wire Knobs, Porcelain	per doz. \$0 20
" " " with Screws	" 25
" Bracket, Porcelain	" 20
" " " with Screws	" 25
" Staples, large size, square head	per gro. 12
" " small " round "	" 12
Large Fence "	per lb. 10
" " Wrought, for Electric Light Wires	per gro. 75

Message Hooks.

No. 1, Nickel Plated	per doz. \$0 75
No. 2, " "	" 1 00
No. 1, Plain	" 60
No. 2, " "	" 80
Security Message Hook	" 3 00

Tinsel Conducting Cord.

Worsted Cord, One Conductor, Red or Green,	per yard, \$0	1
" " Two " " "	"	2
Silk " One " " "	"	1
" " Two " " "	"	2
Tinsel " not covered, large size	"	0
" " " small "	"	0
Phillips' Patent Spiral Conductor, single, Worsted covered,	"	1
" " " " double, " "	"	2
Medical Tips, for Cords	each,	0
Doolittle " "	"	0
Flexible Copper Conductor for Electric Light Purposes, with Resistance equal to No. 6 Copper Wire	per foot,	10

Platinum Wire.

NOS.	PER INCH.	NOS.	PER FT.
12	\$ 80	26	\$ 60
14	50	28	50
16	35	30	30
18	25	32	20
20	20	34	15
22	15	36	10
24	08	40	06

Stationery.

Nickel Plated Board Clips, letter size	per doz.	\$7 00
" " " " note "	"	6 00
Orton Awl " " " "	"	3 00
Manifold Books, white, 10 x 15 inches	each,	40
" " yellow, 10 x 15 "	"	40
Black Carbon Sheets, 10 x 15 "	"	10
Stylus Agate, best quality	"	60
" Steel or Bone	"	30
Message Paper	per lb.	20
Register "	"	25
Canceling Punches, Nickel Plated, Post & Co.'s	per doz.	30 00

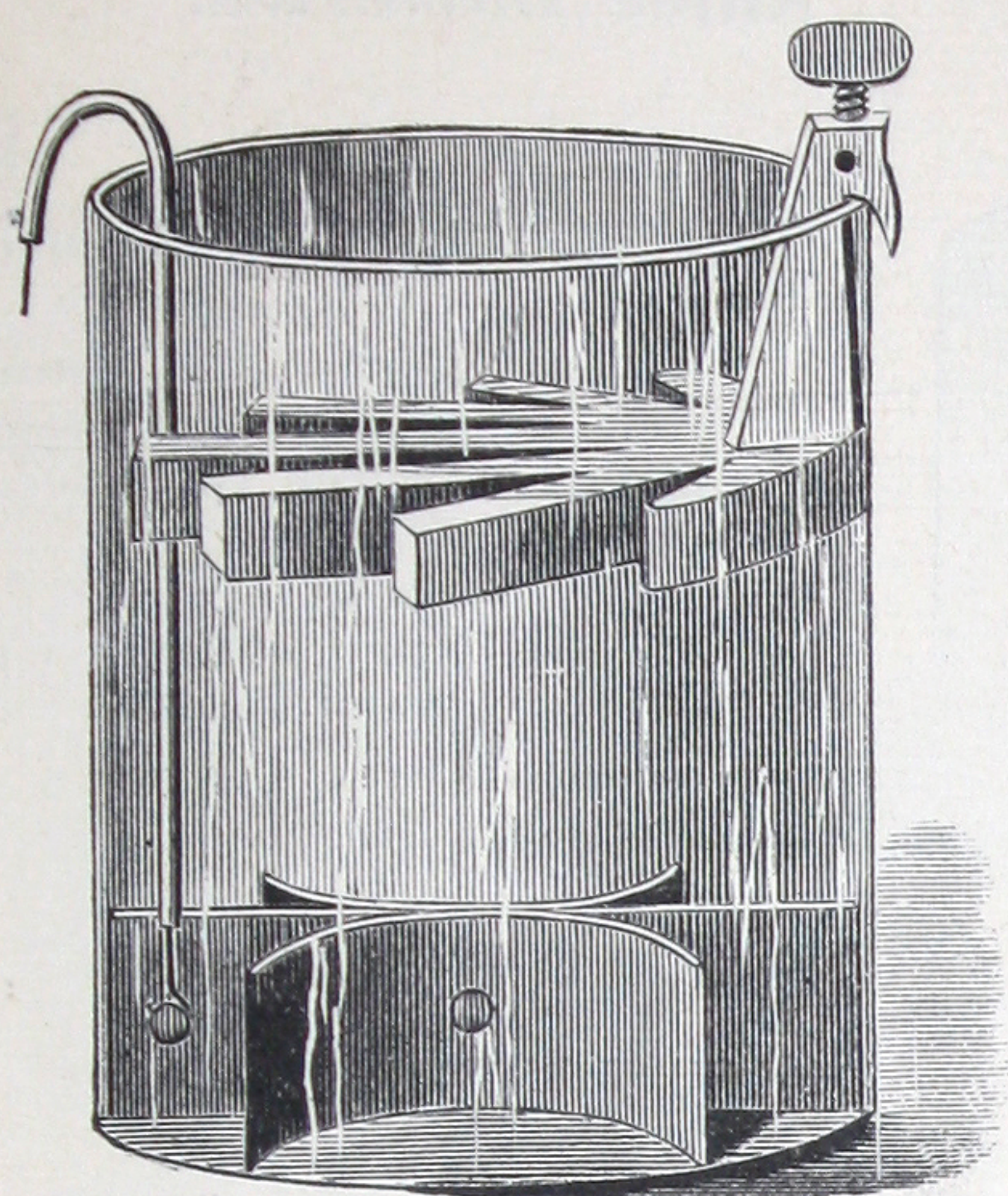
Blank or Order Books of all kinds furnished at lowest rates.

Special prices made on the above named articles on application, stating quantity wanted.

Edison's Electric Pen.

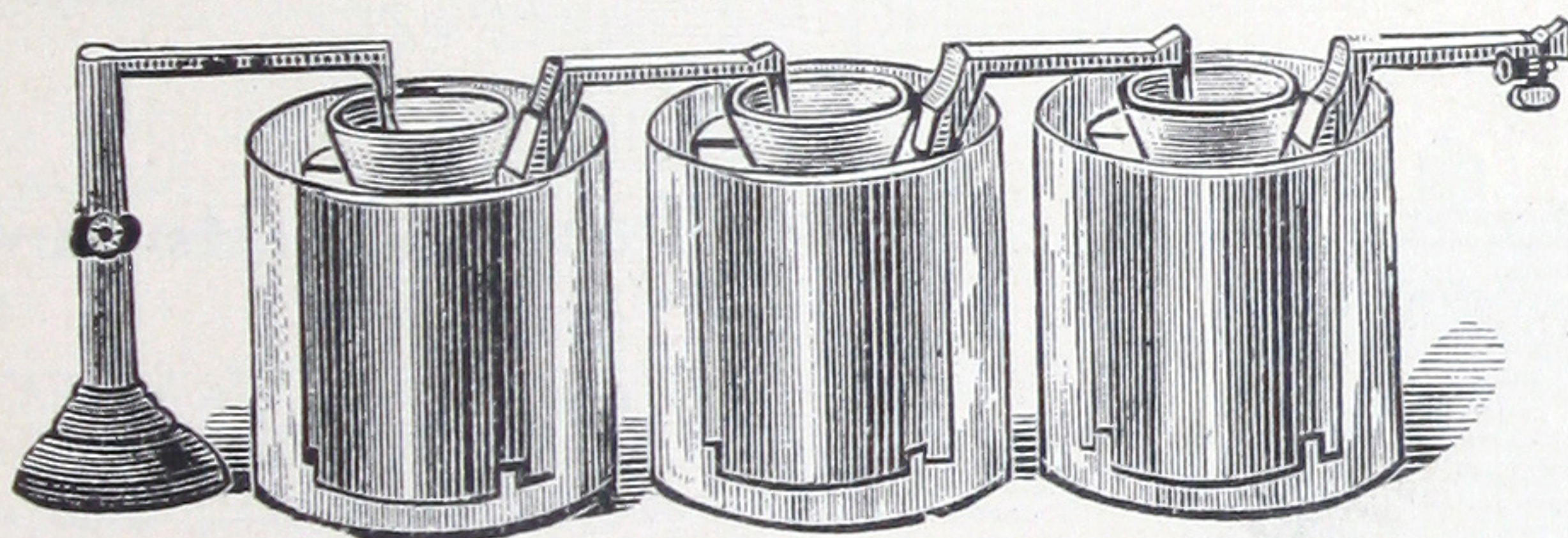
Complete Outfit, with No. 1 Press, size 7 x 11 inches	\$25 00
" " " " 2 " " 9 x 11 "	30 00
" " " " 3 " " 9 x 14 "	35 00
Electric Pen only, with Cord	18 00
No. 1, Press only	10 00
No. 2, " "	12 00
No. 3, " "	16 00
Battery	\$5 00
Cord	50
Black Ink per bottle	75
Porus Cup for battery	40
Carbons	each, 25
Zincs	" 20
Jars	" 35

Batteries.



	GRAVITY 5 x 7 MAIN.	GRAVITY 6 x 8 LOCAL.	DANIEL 6 x 8 LOCAL.	CROW FOOT 5 x 7 MAIN.	CROW FOOT 6 x 8 LOCAL.
Cell complete-----	\$ 90	\$1 00	\$1 50	\$0 75	\$0 90
Copper-----	20	20	-----	20	20
Copper, with pocket-----	-----	-----	50	-----	-----
Jar, glass-----	30	35	35	30	30
Zinc-----	30	35	35	30	40
Zinc Hanger-----	20	20	-----	-----	-----
Porus Cup-----	-----	-----	20	-----	-----

Batteries.



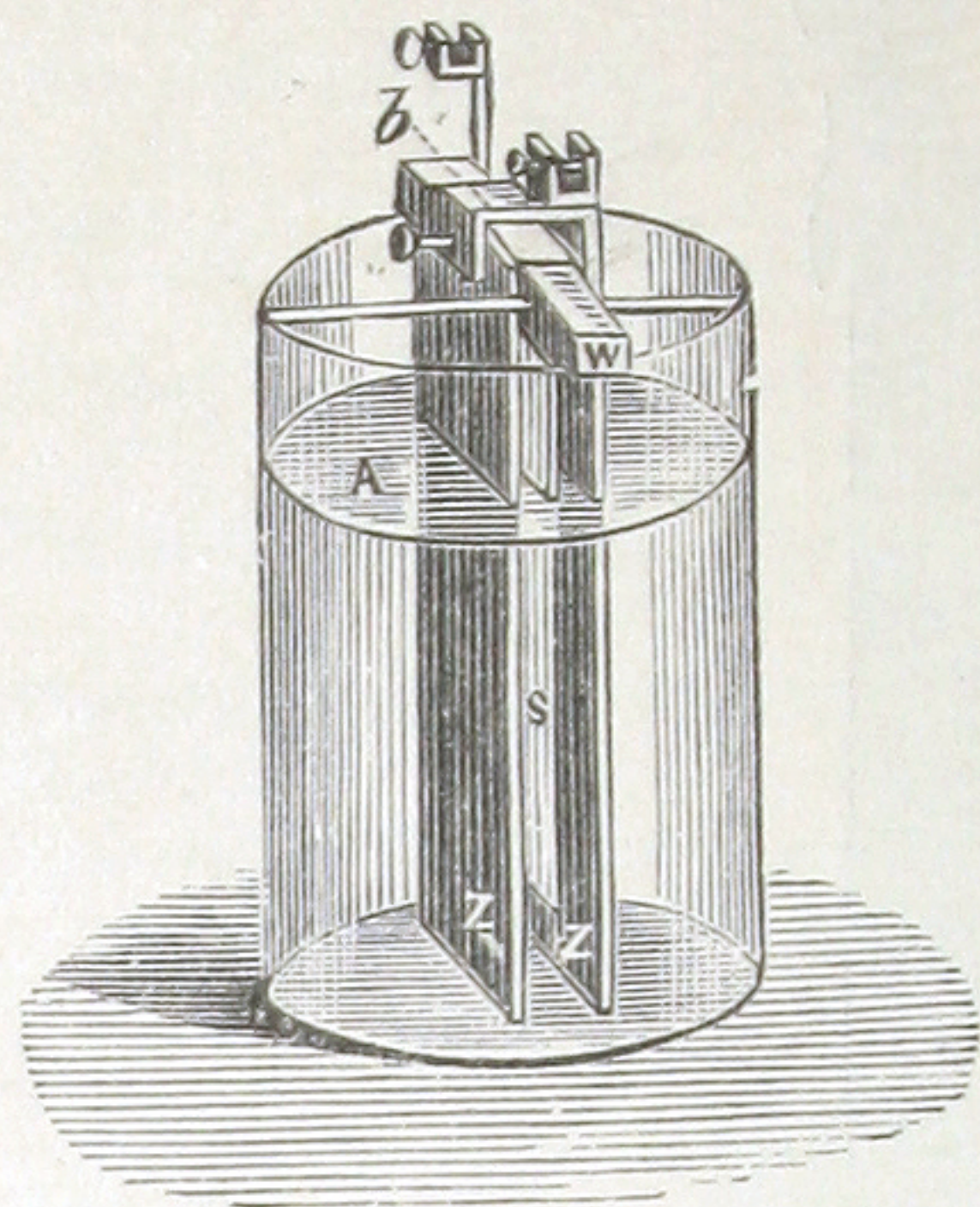
GROVE BATTERY.

Per Cell, single-----	\$2 00
“ for series-----	1 60
Platinum-----	80
Porus Cup-----	15
Jar, 4 x 4-----	25
Zinc-----	45
Platinum, Standard-----	50

CARBON BATTERY.

Per Cell, 4 x 4, complete-----	\$1 35
Carbon-----	12
Carbon Connection-----	22
Carbon Clamp-----	10
Jar (glass)-----	25
Porus Cup-----	12
Zinc-----	40
Zinc Connector-----	15

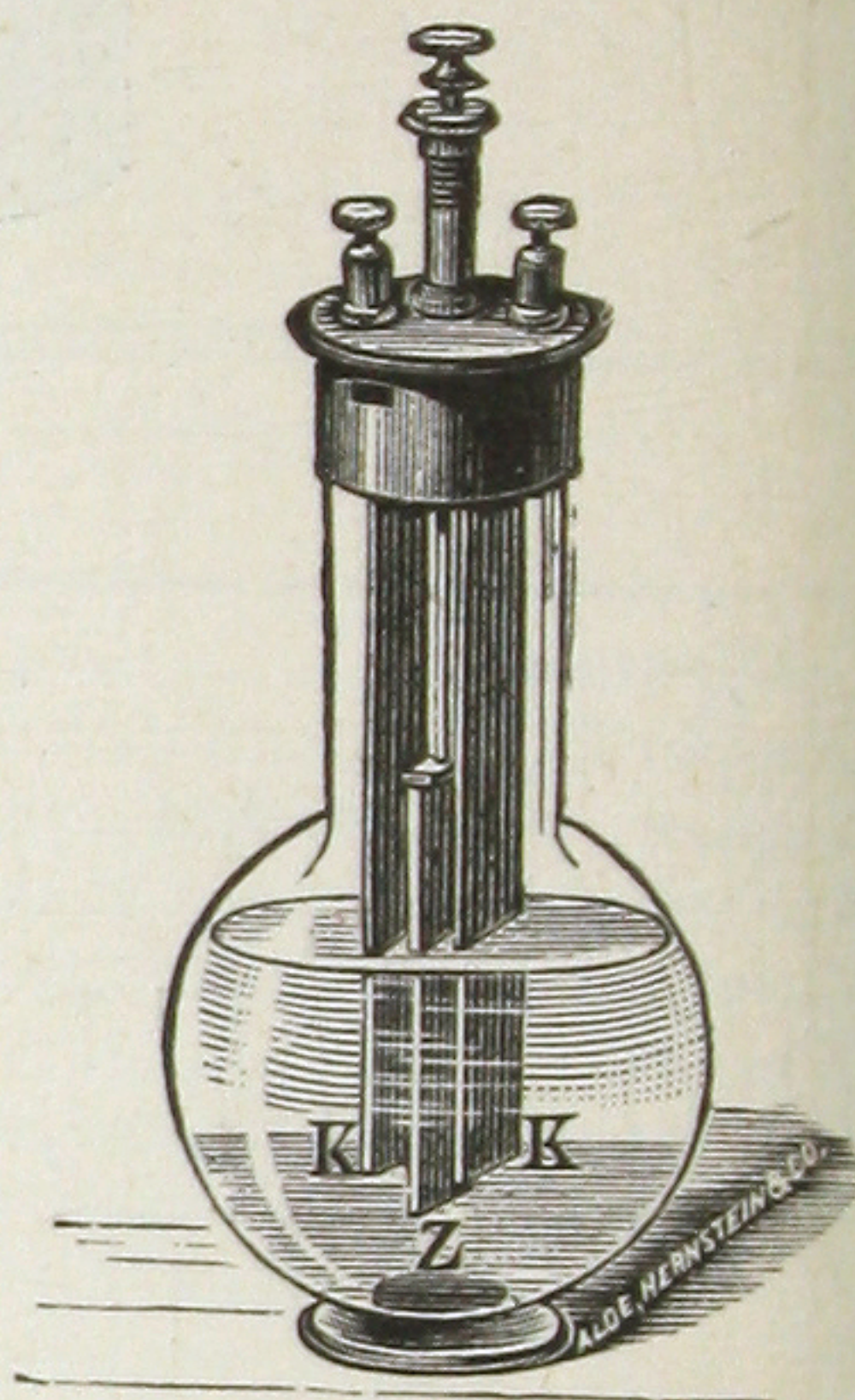
Smee Batteries.



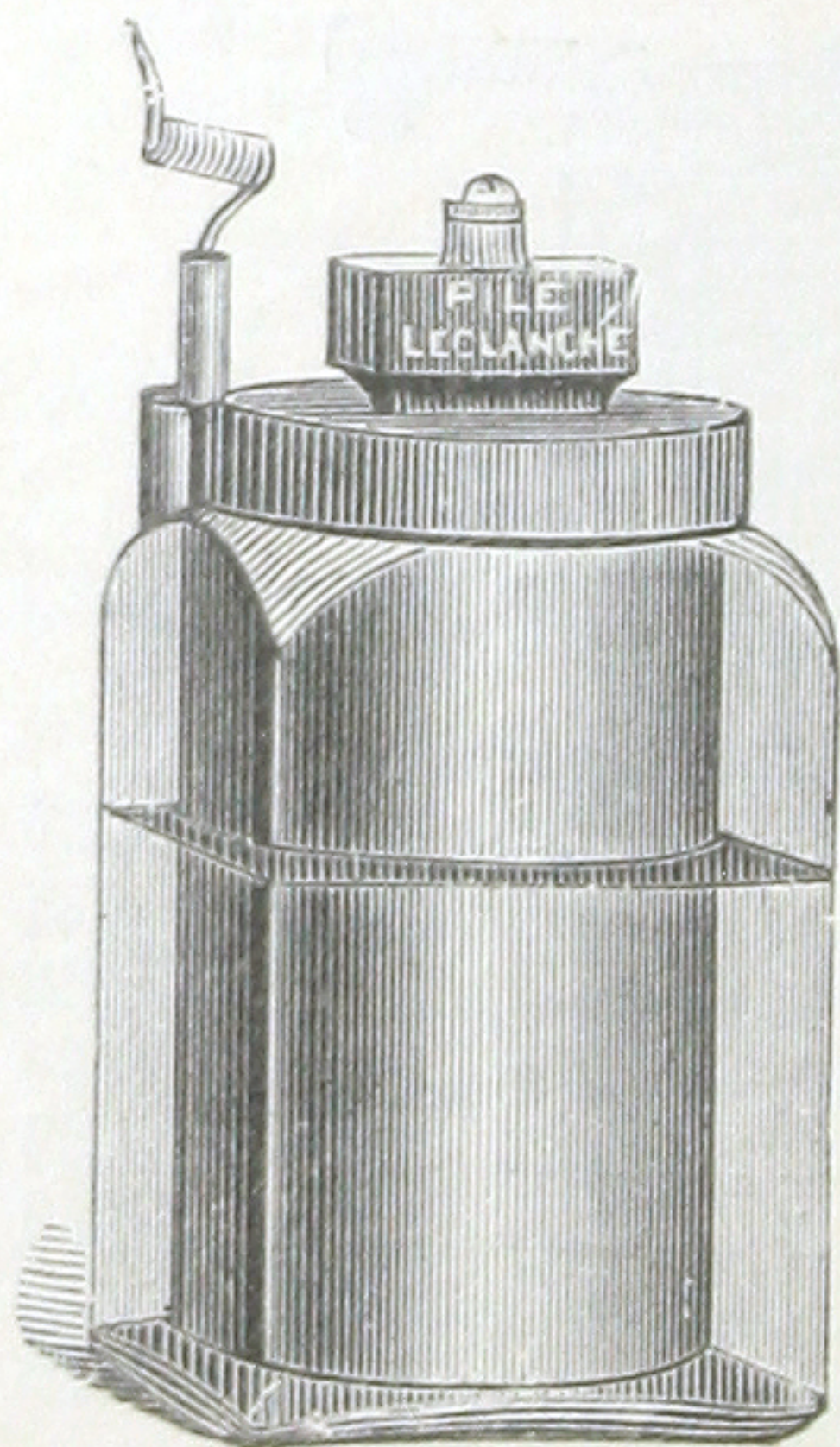
With Carbon Plates, 4 x 4 Cell, complete -----	\$2 50
Carbon and Connection -----	1 75
Carbon Connector -----	18
Carbon Insulator -----	09
Clamp -----	60
Glass Jar -----	30
Zincs, rolled, per pair -----	50
Wood Support -----	10

Grenet Battery.

No. 1, 6 inches high -----	\$2 00
No. 2, 8 " " -----	3 50
No. 3, 10 " " -----	4 50
No. 4, 12 " " -----	5 50
Extra Zincs for 6 x 8 inch Cells ----- each,	25
" " " 10 x 12 " " ----- "	30

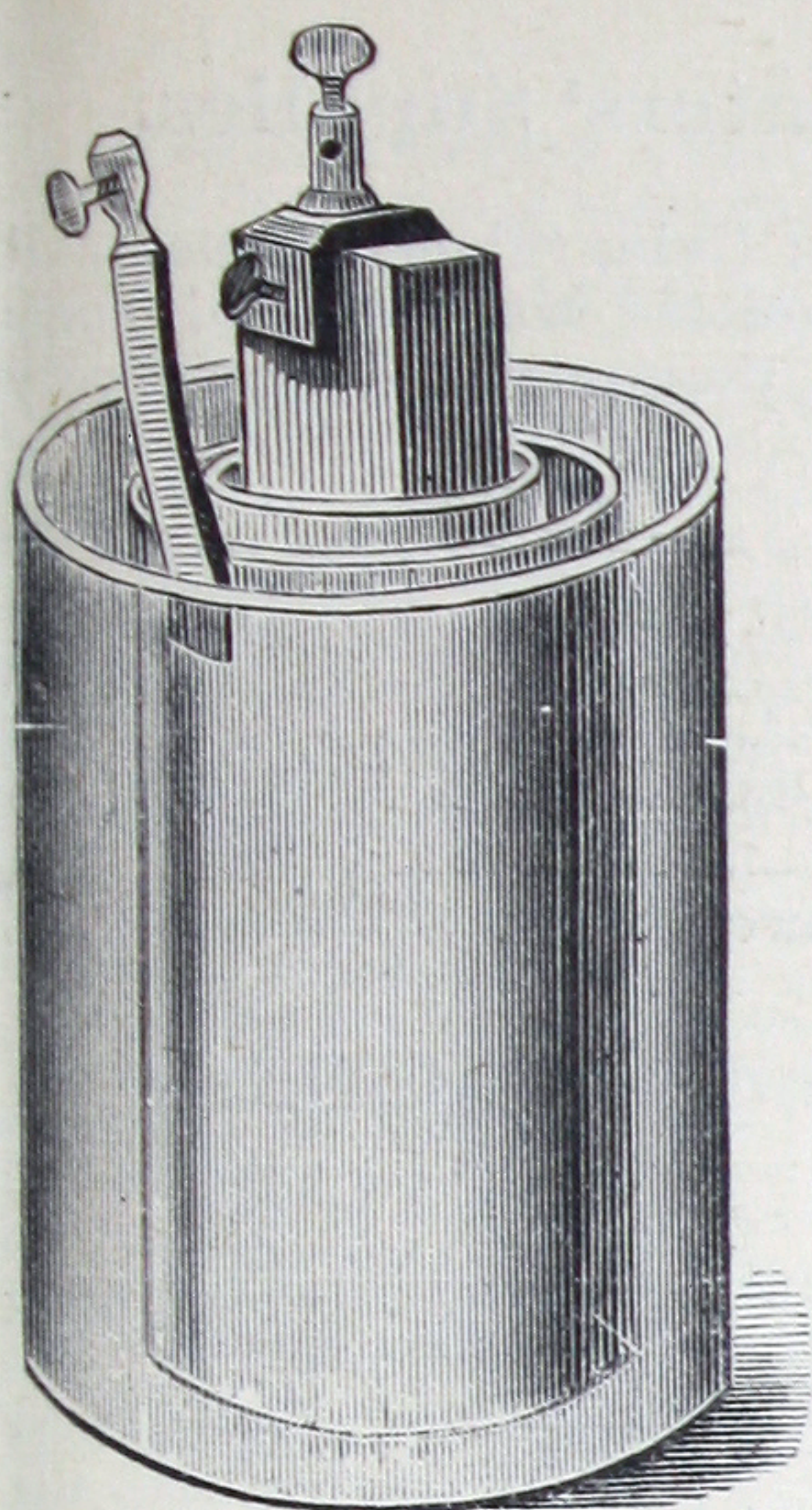


Le Clanche Batteries.



	DISQUE 4½ x 6 IN.	NO. 1 3½ x 6.	NO. 2 3½ x 5.
Cell, complete	\$2 00	\$1 80	\$1 65
Porus Cup ---	1 75	1 55	1 40
Jar -----	20	20	15
Zinc -----	12	12	12
Salammoniac	08	05	05

Sealing, 25 cents extra.



Bunsen Battery.

	2 QTS.	1 GAL.	2 GALS.
Cell, complete -----	\$2 00	\$3 00	\$5 75
Carbon -----	35	50	1 40
Carbon Connection--	45	80	1 10
Glass Jars-----	30	35	75
Porus Cup-----	20	25	75
Zinc, with Connection--	70	1 10	1 75

Nitro Chromic Battery.

Per Cell, complete -----	\$5 00
Carbon-----	1 60
Carbon Connection and Clamp-----	65
Glass Jar, 8½ x 8 x 5 inches-----	75
Porus Cup-----	60
Perforated Rubber Partition-----	15
Zinc -----	1 50
Zinc Connection -----	15
Copper Connecting Strap-----	05
Compound Nitro Chromic Salts, per lb.-----	30

Prism Le Clanche.

Complete Cell-----	\$2 00	Glass Jar Top-----	\$0 12
Prisms, per pair-----	1 00	Zinc -----	12
Carbons, mounted, complete--	50	Salammoniac -----	08
Glass Jar-----	20		

We have only made prices on all the leading Batteries, but are prepared to furnish all styles. Hill's Patent Battery, Lockwood's Patent Battery, Watson's Patent Battery, Eagle's Metallic Battery, Fuller's Mercury Battery, all forms of Smee Battery, Plunge Battery, and everything in the Electro Platers' line. We shall be pleased to furnish lowest estimates at any time.

Battery Utensils.

Battery Brush-----	25 & 35	Rubber Funnel-----	\$0 75
Battery Syringe, rubber-----	2 50	Hydrometer for testing Blue	
Extra Pipes for Syringes-----	75	Vitriol Batteries-----	75
Syphon-----	75		

Electrotypers' and Nickel Platers' Supplies.

Gold and Silver Solutions in any quantity; Gold, Silver, Copper and Nickel Anodes of all shapes and sizes; all Chemicals, Materials and Tools used in Silver and Nickel Plating furnished promptly and at the very lowest prices.

Grain Nickel-----	per lb. \$2 50
Pure Nickel in rolled or cast plates-----	" 2 50
Single Sulphate of Nickel Crystals-----	" 1 50
Double Sulphate of Nickel and Ammonium-----	" 1 00
Rouge, for finishing-----	" 75-1 00
Crocus -----	" 20

Scratch Brushes, all kinds, lowest rates.

Directions for Setting Up and Maintaining Batteries.

GRAVITY OR CALLAUD BATTERY.—Open out the copper, spread it so as to present all of its surface to the action of the solution, place it in the bottom of the jar, run the insulated wire out top of the jar for connecting up.

Suspend the zinc above the copper from the tripod, run the wire through the hole in center and fasten, the hanger has a screw hole in it to receive the copper from the next cell.

Pour clean soft water into the jar until it covers the zinc, then drop in 6 or 8 ounces of copper sulphate, (or blue vitriol) in small crystals.

To hasten the action of the battery, dissolve 2 or 3 ounces of zinc sulphate, (or white vitriol) in as many ounces of water and gently pour it in on top of the copper solution.

Connect the battery then (for ordinary purposes), zinc of one cell to copper of the next and so on, finally connect the two electrodes of the series and let them so remain for a few hours until the separation of the two solutions which will be known by the blue observed in bottom of copper solution, this blue line should be maintained midway between the zinc and copper, when the "blue line" is too low drop in a few crystals of copper sulphate, if it is too high connect the battery in short circuit as before described until it goes down, or reach down with syringe and draw out some of the copper solution and add zinc solution or fresh water.

As long as the battery remains in action there is an increase in quantity of zinc sulphate solution in the upper part of the jar, the specific gravity of this solution should be maintained at 25 degrees, when the hydrometer indicates a lower degree there is too little zinc sulphate solution, when a higher degree than twenty-five there is too much zinc sulphate and a portion of it must be taken out and that remaining must be diluted with pure water.

A hydrometer is essential to properly maintain a large battery.

When zinc oxide forms on the surfaces of the zinc it must be taken out and washed well in clean water with a brush.

DANIEL BATTERY.—Fill the jar and porous cell with water and the pocket with copper sulphate. The directions for Gravity or Callaud Battery will apply to the maintenance of the Daniel.

LeCLANCHE BATTERY.—Put 6 ounces sal-ammoniac into the glass, fill one-third of pure water and stir. Put in the porous cell and fill with water to the neck of jar, pour a few spoonfulls of water into the holes in the porous cell, put in the zinc and connect up the battery. The inside rim of the jar should be coated with beeswax or paraffine, to prevent salts from over-running.

The battery should be kept in a dry place and does not require any attention to maintain, except to add a little water occasionally to supply loss by evaporation.

GROVE BATTERY.—Fill the porous cup with strong nitric acid and the glass jar with dilute sulphuric acid, about 20 parts of water to one of acid. When not in use, the plates should be removed from the jar and the nitric acid emptied out.

GRENET BATTERY, TO MAKE SOLUTION.—To three pints of cold water add five fluid ounces of sulphuric acid; when this becomes cold, add six ounces (or as much as the solution will dissolve) of finely pulverized bichromate of potash. Mix it well.

TO CHARGE THE BATTERY.—Pour the above solution into the glass cell until it nearly reaches the top of the spherical part; then draw up the zinc and place the elements in the cell. The fluid should not quite reach the zinc when it is drawn up.

SMEE BATTERY.—The liquid used to charge this battery is dilute sulphuric acid—about one part acid to ten parts water.

CARBON BATTERY.—Fill the glass jar with water; the porous cell with electro-poion fluid. The height of the liquid in the jar and the porous cell should be about the same.

CARBON BATTERY, extra size for Nickel Plating.—In the porous cell use a mixture of equal parts by measure of sulphuric acid and water, with two ounces of nitric acid. In the outer jar use a mixture of 12 parts water to one part sulphuric acid. When the liquid in the outer jar becomes milky, use fresh solution. Add a little nitric acid occasionally to porous cell. Keep zinc well amalgamated.

BUNSEN SOLUTION.—Put strong nitric acid in porous cell, fill outside jar with sulphuric acid diluted with water, seven parts of water to one of sulphuric acid. Electro-poion fluid can be used in place of nitric acid if desired.

BUNSEN CHROMIC SOLUTION.—One pound bi-chromate potash in ten pounds of hot water, when cold add five pounds strong solution, sulphuric acid. Place the zinc in saturated solution of common salt.

ELECTROPOION FLUID.—To eight pints of water add two pints sulphuric acid. While the mixture is still hot, stir in one pound bi-chromate of potash, pulverized. It is ready for use when cold. Use an earthen vessel for mixing.

AMALGAMATING SOLUTION.—Mix one pound nitric acid with two pounds muriatic, and add slowly 8 oz. mercury. When dissolved, add three pounds more muriatic acid and stir. Clean the zinc with potash and dip in this solution for a second or two. Rinse in clear water and rub with battery brush.

Another method of amalgamating zincs is to clean them by dipping in dilute sulphuric acid; then dip into a vessel of mercury, and allow the surplus to drain off; or brush off with a soft brush.

All zincs should be well amalgamated; except zincs of blue vitriol Batteries and Le Clanche. Zincs of most batteries can be kept in order by pouring a few drops of mercury in solutions with zincs.

Carbon Plates.

LENGTH.	WIDTH.	THICKNESS	PRICE.	LENGTH.	WIDTH.	THICKNESS	PRICE.
10	6	$\frac{1}{16}$	\$0 60	6	3	$\frac{1}{2}$	\$0 40
10	6	$\frac{1}{8}$	60	7	$4\frac{1}{2}$	$\frac{1}{2}$	55
$3\frac{1}{2}$	1	$\frac{1}{4}$	07	9	$4\frac{1}{2}$	$\frac{1}{2}$	65
$3\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{4}$	08	6	$\frac{7}{8}$	$\frac{5}{8}$	12
$4\frac{1}{4}$	$1\frac{3}{8}$	$\frac{1}{4}$	10	6	$1\frac{3}{4}$	$\frac{5}{8}$	30
$4\frac{3}{4}$	$1\frac{3}{8}$	$\frac{1}{4}$	11	9	2	$\frac{3}{4}$	50
$5\frac{3}{4}$	$1\frac{3}{4}$	$\frac{1}{4}$	15	12	9	$\frac{1}{2}$	2 25
9	6	$\frac{1}{4}$	60	12	10	$\frac{1}{2}$	2 25
10	6	$\frac{1}{4}$	60	12	12	$\frac{1}{2}$	2 25
12	6	$\frac{1}{4}$	75	12	6	$\frac{1}{2}$	1 25
12	12	$\frac{1}{4}$	1 25	9	6	$\frac{1}{2}$	1 00

SPECIAL SIZES TO ORDER.

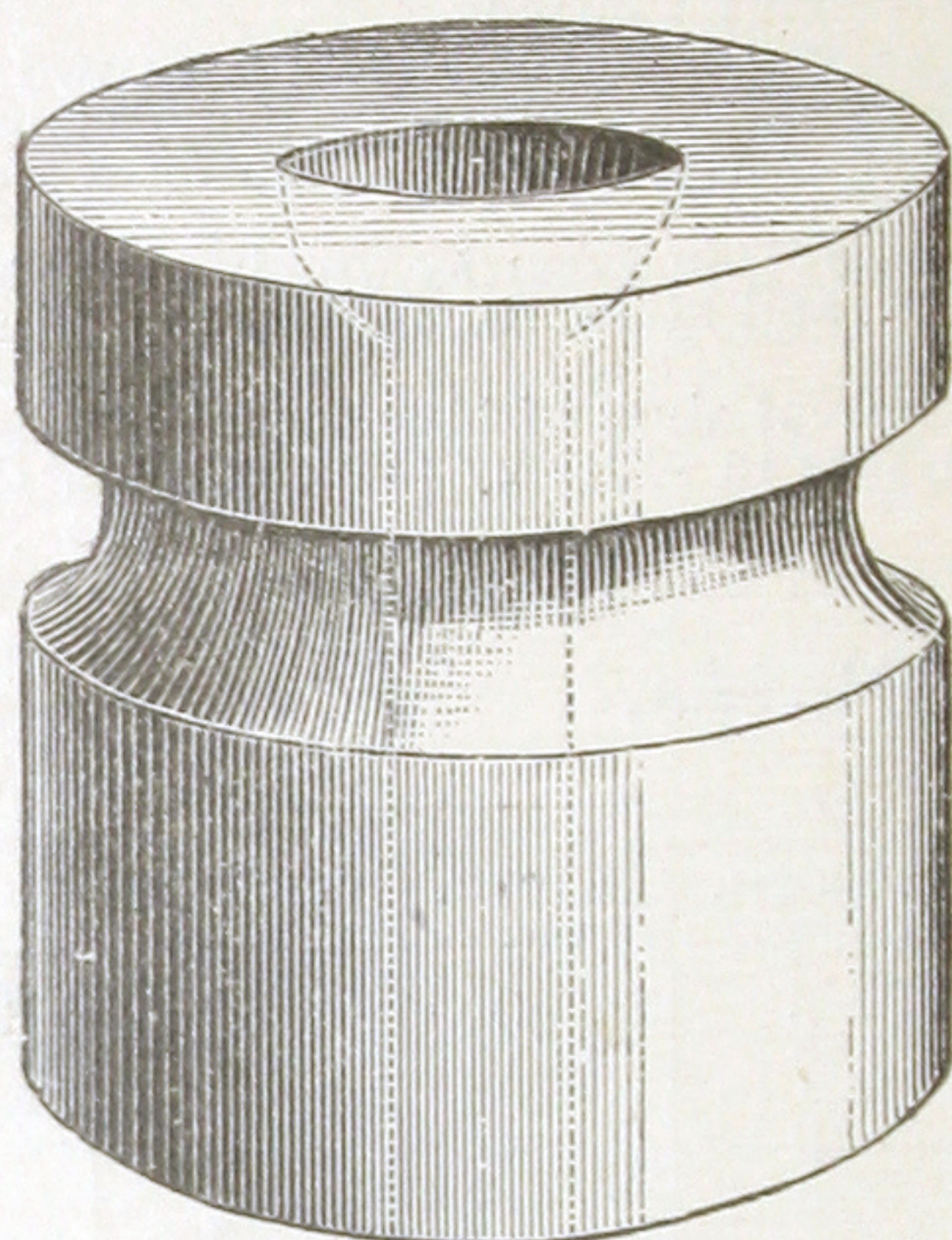
Electric Light Carbons.

Carbons are all 12 inches long.

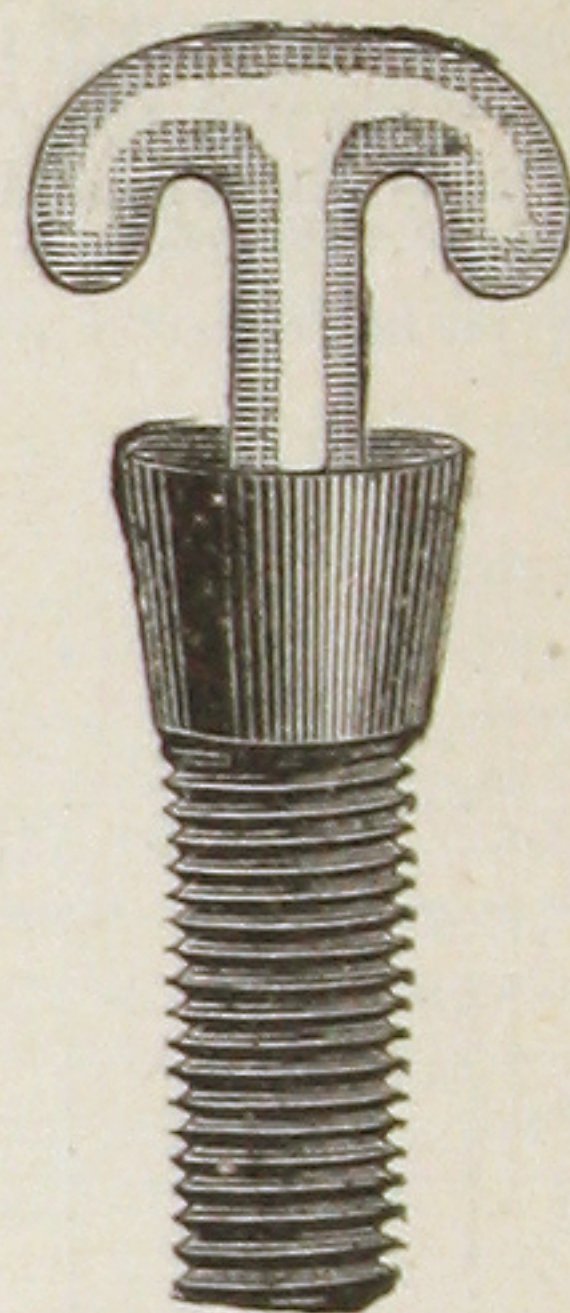
DIAM.		DIAM.	
$\frac{1}{16}$ in.	\$0 05	$\frac{1}{2}$ in.	\$0 15
$\frac{1}{8}$ "	05	$\frac{9}{16}$ "	17
$\frac{3}{16}$ "	06	$\frac{5}{8}$ "	20
$\frac{1}{4}$ "	$06\frac{1}{2}$	$\frac{3}{4}$ "	25
$\frac{5}{16}$ "	08	$\frac{7}{8}$ "	28
$\frac{3}{8}$ "	11	1 "	34
$\frac{7}{16}$ "	13	$1\frac{1}{4}$ "	40

Chemicals, etc.

Nitric Acid-----per lb.	\$0 20	Blue Vitriol-----per lb.	\$0 10
Sulphuric Acid-----"	10	" " per bbl., special price.	
Muriatic "-----"	10	Mercury-----per lb.	80
Battery Oil-----per gal.	75	Sulphate Zinc-----"	10
Bichromate Potash--per lb.	25	Sal Ammoniac, extra fine, "	20
" " powd. "-----"	40	" " per bbl., special price.	
Bi-Sulphate Mercury--"	1 50		



PORCELAIN INSULATOR.



RUBBER HOOK INSULATOR.

Line Material.

Brackets, Oak Wood Screw, plain-----	each, \$0	03
" " " " painted-----	"	04
Pins, " " " plain, for Cross Arms-----	"	02
" " " " painted, " "-----	"	03
Insulators—No. 1, extra heavy Glass-----	"	08
" No. 2, Regular Western Union-----	"	07
" No. 3, large-----	"	06
" No. 4, " Pony-----	"	05
" No. 5, Small "-----	"	04
" No. 4, Porcelain, without Screw-----	"	02
" No. 4, " with 3 inch Screw-----	"	03
" Rubber Hook, best insulating properties-----	"	15

Special prices made to parties building and operating long lines; also, to Telephone and Telegraph Companies.

Cross Arms.

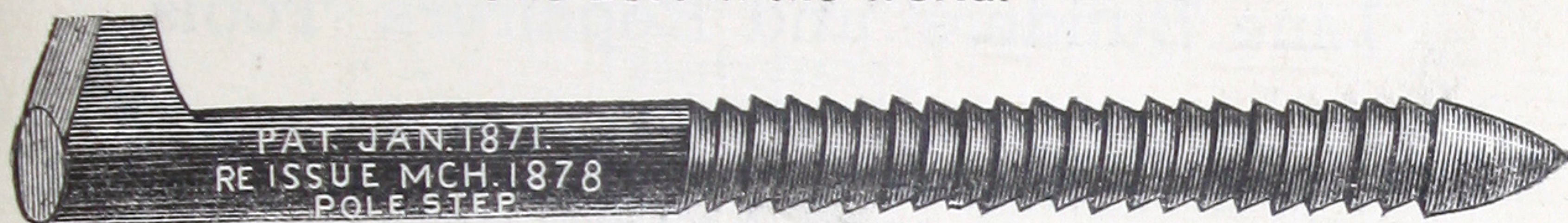
2 pin, 3 feet long	-----	\$0 25
4 " 5 " "	-----	40
6 " 7 " "	-----	55
8 " 10 " "	-----	80

Pole Steps.

Pole Steps, $\frac{7}{16}$ inch, round iron, 9 inch long	-----	each,	05
" $\frac{1}{2}$ " " " 9 " "	-----	"	$05\frac{1}{2}$
" $\frac{5}{8}$ " " " 9 " "	-----	"	$06\frac{1}{2}$
Fetter Pole Step, 9 " "	-----	"	05

The Fetter Patent Pole Step.

The Best in the World.



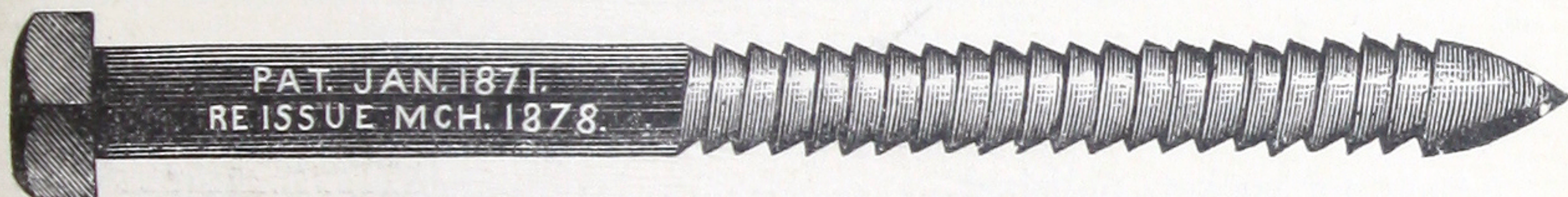
Special prices upon application. Put up in kegs of 200 lbs., containing about 400 steps,
STANDARD ELECTRICAL WORKS, General Agents.

Pole Rings.

Pole Ring—No. 1, 3 inch, diameter $1 \times \frac{1}{4}$ inch, iron	-----	each,	\$0 07
" No. 2, 3 " " $1 \times \frac{1}{8}$ " "	-----	"	06
" No. 3, 3 " " $\frac{3}{4} \times \frac{1}{2}$ " "	-----	"	06
Lag Screws, $6 \times \frac{1}{2}$ inch, with Washers, Gimlet Points	-----		05

The Fetter Patent Drive Screw.

[DRIVE WITHOUT BORING.]



Of all kinds, for Railroad, Telegraph, Telephone and Mining Companies, are the best and cheapest.

We are prepared to promptly execute orders for the celebrated DRIVE SCREWS. They are stronger than Lag Screws, and save those using them very much in labor and time.

For every purpose for which a screw is wanted these are especially adapted, with this advantage: they **drive without boring**, and by reason of the conoidal point and square shouldered thread, hold firmer and stronger than any other thread when screwed in after boring, or otherwise. A trial will prove this. They are put up in kegs of 200 pounds, containing about 400 Screws and Washers of the regular telegraph size, $\frac{1}{2} \times 6$ inches.

Specially low prices to Contractors and Telegraph and Telephone Companies will be given upon application.

Fetter Drive Screw, $6 \times \frac{1}{2}$ inch, (drive without boring)	-----	05
Tie Wires, No. 10, Galvanized, per 100	-----	65
" " 10, Annealed, "	-----	60
House Top Bracket, 4 Legs, 3 feet high	-----	50
" " " 4 " 2 "	-----	35
" " " 4 " 18 in. high	-----	25

Cone Bracket, 2 Legs-----	20
Angle Iron, for driving between bricks, with Pin-----	10
Iron Pin, for use where heavy pressure is brought to bear-----	35
" 12 in. " " " " " "-----	50
Cast Iron Break, for Pole Tops, heavy-----	75
Ground Wire Plates, Copper, 15 x 15 inch-----	60
" " " " 15 x 30 "-----	1 20
" " " " 30 x 30 "-----	2 40
Spikes for driving wood brackets to pole-----per lb.	05
Spikes in kegs, 100 lbs., lowest rates.	
The Antihum, which prevents the disagreeable humming on tele- phone wires, sample by mail-----	25
Antihum, per dozen-----	2 25
" " 100-----	15 00

Line Builders' and Repairers' Tools.

Pliers.

STUBBS—PER PAIR.					COMMON—PER PAIR.				
4 in.	5 in.	6 in.	7 in.	8 in.	4 in.	5 in.	6 in.	7 in.	8 in.
\$0 80	\$0 85	\$1 20	\$1 50	\$2 00	\$0 65	\$0 70	\$0 80	\$1 00	\$1 15

Vises.

STUBBS—PER PAIR.			COMMON—PER PAIR.		
5 inch.	5½ inch.	6 inch.	5 inch.	5½ inch.	6 inch.
\$1 75	\$2 00	\$2 50	\$1 00	\$1 25	\$1 75

An additional charge of 25 cents will be made for attaching loop for strap, or strap for pulley to the vise.

Common Vise, with wooden handle-----	\$0 75
Stubbs' Cutting Snips-----	1 00
Hall's Patent Cutting Snips, 5 inch-----	1 25
" " " " 7 "-----	1 75

Swiss Pliers.

5 inch, for pocket, polished-----	\$1 00
5 " " " and nickel-plated-----	1 25

Patent Wire Shears and Pliers Combined.

6 inch, cuts wire as large as No. 11, Stubbs' gauge-----per pair,	\$1 00
8 " " " " No. 8, " "-----	1 25
10 " " " " No. 6, " "-----	2 00

These Pliers are the best where a great deal of cutting is required, as they perform that operation with less fatigue than any Pliers offered. For barbed wire they are unequalled.

Fry's Patent Pliers, 8½ inch, side-cutting-----per pair,	\$2 50
Pocket Tool Case, containing 20 tools—Brad Awls, Scratch Awl, Reamer, Screw Driver, Chisel, Wrench, etc.-----	75
Splicing Clamps, Cast Steel, Polished-----	1 75
" Wrench, "-----	75

Pulleys and Tackle.

Pulleys—No. 1, 3 inch, wood, light	per pair, \$1 50
" No. 1, 3 " " with rope	" 2 25
" No. 2, 3½ " wired, for large wire	" 2 00
" No. 2, 3½ " wood, wired, for large wire, with rope, "	" 2 75
" No. 1, with eccentrics and rope, complete	4 25
" No. 2, " " " " "	4 75
" No. 3, Iron, 3 inch	per pair, 1 50
" No. 3, " 3 " with rope	" 2 25

Line Wire Reels.

Reel, on Barrow	\$10 00	for Wagon	9 00
Electric Light Wire Reel			12 00

Climbers.

Spring Steel	per pair, \$1 75
" " with Straps	" 2 75

Hatchets.

No. 2	\$0 60	No. 3	75
No. 4, Broad			1 00

Hand Cars.

The Sheffield Velocipede Car, for Narrow or Broad Gauge, especially adapted for telegraph repair men-----price, \$45 00

Long Handled Pole Spoons, (Ames')	1 25
" " Shovels	1 25
Shovels and Scoops—all makes on hand.	
Digging Bars, Steel Point	2 50
Tamping " " "	2 50

Eccentrics.

Brass, Steel Clamp	\$1 00
" " " with loop for strap	1 25
Come Along for telegraph men, Nickel-plated	1 50
" " " barbed wire	1 00
Line Tapping Clamp	3 50

**Tree Trimmers.**

PATENT.

4 ft. handle.	6 ft.	8 ft.	10 ft.
\$2 00	\$2 25	\$2 50	\$2 50

Screw Drivers.

PLAIN.

3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	12 in.
\$0 15	\$0 20	\$0 25	\$0 30	\$0 35	\$0 40	\$0 50
Inspector's Screw Driver, Polished Handle, Stubbs', Steel, Nickel-plated,						
any length blade, from 3 to 6 inches						\$0 75
Screw Driver Bits, to fit ordinary brace						20
Brush Hooks, for cutting out underbrush						1 25

Gas Pliers.

5 inch, one hole	\$0 60
7 " two "	75

These are a very handy tool for experimenters in working about a lathe.

Hammers.

Plain Nail Hammer	\$0 50
Riveting "	40
All sizes, lowest rates.	

Pikes for Raising Poles.

Pikes, Plain	\$1 75
Pikes, with Guards	2 75

Telephone Inspector's Tool Box.

A complete set in Morocco Velvet-lined case, containing everything necessary for adjusting Telegraph or Telephone Apparatus.

Price of Case containing 2 Screw Drivers, Oil Can, Pliers, Tweezers, File, Oil Stone and Punch	\$5 50
--	--------

Files of all kinds,—Stubbs', Butcher and Common for Experimenters and Jewelers at lowest rates.

Soldering Apparatus.

Portable Charcoal Fire Pot	\$1 50
" " " with Solder Pot	2 25
" Alcohol Furnace	4 50
Alcohol Torches	75c. to 1 50
Blow Pipes	30c. to 50
Soldering Coppers, per pair	\$1 50 to 3 00
Solder Ladle	30
Soldering Fluid, per pound	15
Solder, per pound	20
Soldering Salts, in Bottle, $\frac{1}{2}$ lb.	50

We are prepared to furnish all kinds of Tools, and carry in stock a full line of Wrenches, Drills, Chucks, Taps and Dies, Auger Bits, Chisels, Cold Chisels, Tape Measures, Gauges, Wire Gauges, Oil Cans, Screws, Machine and Wood, Bench Vises, Forges, etc. Send for special Price Lists.

Experimenter's Portable Forge, without Hood	\$
" " " with "	

Electric Light Wire.

We carry a full stock of Electric Light Wire of all sizes and makes, and will furnish special prices to Electric Light Companies or to parties constructing Electric Light Plants.

Wires.

As agents for The John A. Roebling's Sons Co.'s celebrated grades of Galvanized Telegraph and Telephone Wire, we are able to supply our customers with the very best Wire, and at lowest rates.

No.	Resistance, per mile.	Weight, per mile.	Price, per lb
6, B B Galvanized,	10 Ohms,	550 lbs.	\$0 08
8, " "	14.1 "	388 "	08
9, " "	16.4 "	325 "	08
10, " "	20 "	268 "	09
11, " "	25 "	216 "	09
12, " "	33 "	168 "	10
14, " "	52.8 "	98 "	12
16, " "	91.6 "	58 "	15

The No. 6 wire is put up in coils 3 to the mile; from 8 to 14, 2 coils to mile; 14 and 16, one coil to mile. Joints are all well soldered, and conductivity guaranteed.

Gutta-Percha Wire.

No. 12, Gutta-Percha Insulation,	36 feet to lb.	per lb.	\$1 50
No. 14, " "	53 " "	"	1 60
No. 16, " "	75 " "	"	1 75
No. 18, " "	126 " "	"	2 00
No. 18, " "	2 Conductors	per ft.	10
No. 24, " "	2 " "	"	14

Kerite Wire.

NO.	DIAMETER.	PRICE, PER FOOT.	NO.	DIAMETER.	PRICE, PER FOOT.
16	$\frac{4}{32}$	$3\frac{1}{2}$	14	$\frac{5}{32}$	$4\frac{3}{4}$
16	$\frac{5}{32}$	$4\frac{1}{2}$	14	$\frac{6}{32}$	$5\frac{1}{2}$
16	$\frac{6}{32}$	$5\frac{1}{4}$	14	$\frac{7}{32}$	$6\frac{1}{2}$
16	$\frac{7}{32}$	$5\frac{1}{4}$	14	$\frac{8}{32}$	$7\frac{1}{2}$

Kerite Tape, for Insulating Joints ----- per foot, \$0 02
 " " " " " ----- " rod, 1 75

Annunciator Wire.

No. 18, any color,	155 feet to lb.	per lb.	\$0 50
No. 19, " "	200 " "	"	50
No. 20, " "	240 " "	"	50

This Wire is double wound and well paraffined.

Office Wires.

No. 12, Red and White, 35 feet to lb.	-----	per lb. \$0 50
No. 14, " " 55 " "	-----	" 50
No. 16, " " 90 " "	-----	" 50
No. 18, " " 132 " "	-----	" 50

This Wire is double wound and braided, paraffined and compressed.

The above Wire with Patent Finish, which makes it more durable-----\$0 55

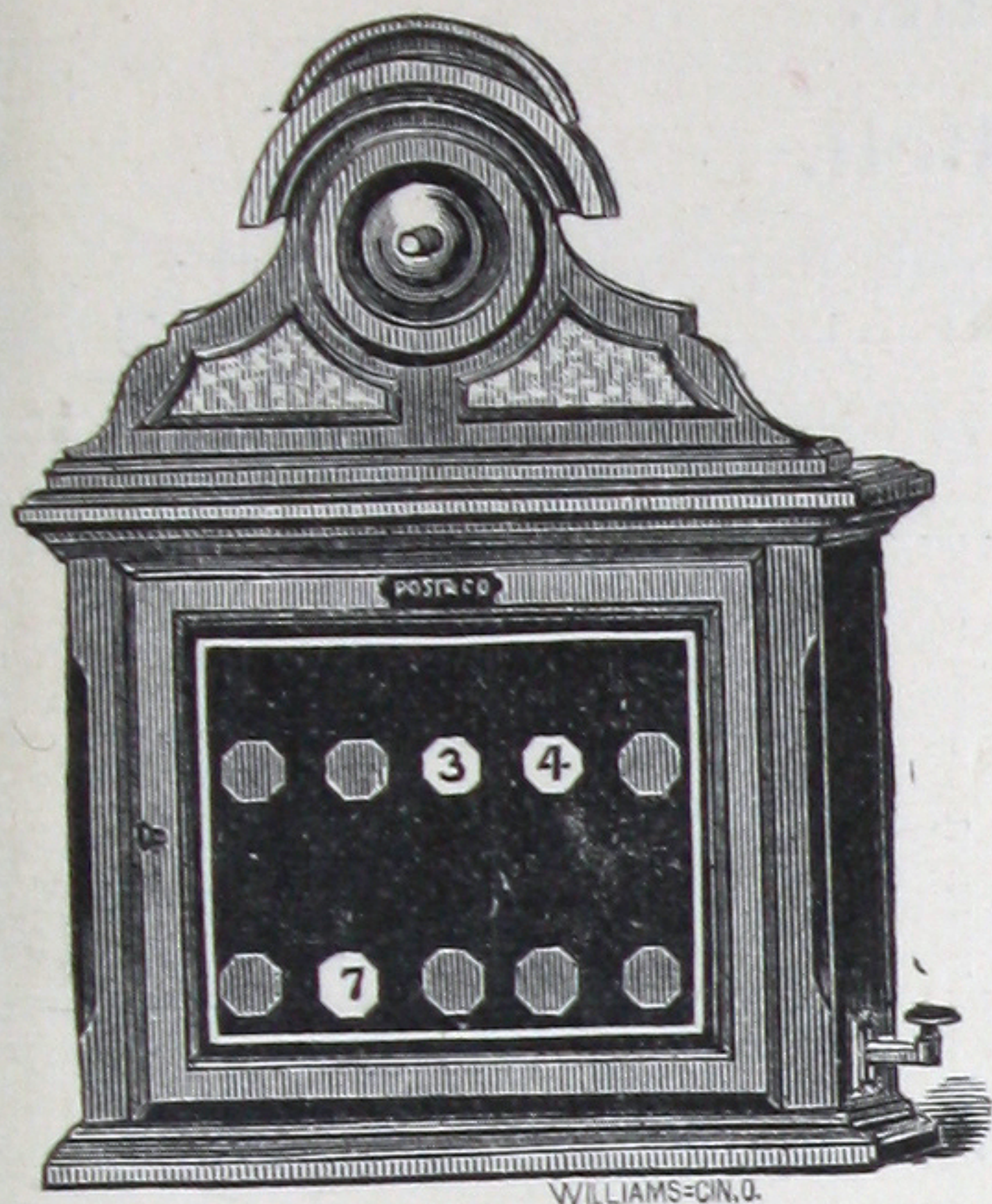
Resistance and Weight Table.

The Resistance is calculated from pure copper wire, and wire furnished by us is about 98 per cent of the conductivity of that of pure copper wire.

NUMBER, DIAMETER, WEIGHT, LENGTH AND RESISTANCE
OF PURE COPPER WIRE.

AMERICAN GAUGE.							
NO.	DIAM.	WEIGHT.		LENGTH.	RESISTANCE OF PURE COPPER		
	INCHES.	SP. GR. 8,889.			AT 70° FAHRENHEIT.		
		GRS. PER FOOT.	LBS. PER 1000 FEET.	FOOT PER LB.	OHMS PER 1000 FEET.	FEET PER OHM.	OHMS PER LB.
0000	,460	4475,33	639,33	1,56	,051	19605,69	,0000798
000	,40964	3549,07	507,01	1,97	,064	15547,87	,000127
00	,36480	2814,62	402,09	2,49	,081	12330,36	,000202
0	,32495	2233,28	319,04	3,13	,102	9783,63	,000320
1	,28930	1770,13	252,88	3,95	,129	7754,66	,00051
2	,25763	1403,79	200,54	4,99	,163	6149,78	,000811
3	,22942	1113,20	159,03	6,29	,205	4876,73	,001289
4	,20431	882,85	126,12	7,93	,259	3867,62	,00205
5	,18194	700,10	100,01	10,00	,326	3067,06	,00326
6	,16202	555,20	79,32	12,61	,411	2432,22	,00518
7	,14428	440,27	62,90	15,90	,519	1928,75	,00824
8	,12849	349,18	49,88	20,05	,654	1529,69	,01311
9	,11443	276,94	39,56	25,28	,824	1213,22	,02083
10	,10189	219,57	31,37	31,88	1,040	961,91	,03314
11	,09074	174,15	24,88	40,20	1,311	762,93	,05269
12	,08081	138,11	19,73	50,69	1,653	605,03	,08377
13	,07196	109,52	15,65	63,91	2,084	479,80	,13321
14	,06408	86,86	12,41	80,59	2,628	380,51	,2118
15	,05706	68,88	9,84	101,63	3,314	301,75	,3368
16	,05082	54,63	7,81	128,14	4,179	239,32	,5355
17	,04525	43,32	6,19	161,59	5,269	189,78	,8515
18	,04030	34,35	4,91	203,76	6,645	150,50	1,3539
19	,03589	26,49	3,78	264,26	8,617	116,05	2,2772
20	,03196	21,61	3,09	324,00	10,566	94,65	3,423
21	,02846	17,13	2,45	408,56	13,323	75,06	5,443
22	,025347	13,59	1,94	515,15	16,799	59,53	8,654
23	,022571	10,77	1,54	649,66	21,185	47,20	13,763
24	,0201	8,54	1,22	819,21	26,713	37,43	21,885
25	,0179	6,78	,97	1032,96	33,684	29,69	34,795
26	,01594	5,37	,77	1302,61	42,477	23,54	55,331
27	,014195	4,26	,61	1642,55	53,563	18,68	87,979
28	,012641	3,38	,48	2071,22	67,542	14,81	139,893
29	,011257	2,68	,38	2611,82	85,170	11,74	222,449
30	,010025	2,13	,30	3293,97	107,391	9,31	353,742
31	,008928	1,69	,24	4152,22	135,402	7,39	562,221
32	,00795	1,34	,19	5236,66	170,765	5,86	894,242
33	,00708	1,06	,15	6602,71	215,312	4,64	1421,646
34	,0063	,84	,12	8328,30	271,583	3,68	2261,82
35	,00561	,67	,10	10501,35	342,443	2,92	3596,104
36	,005	,53	,08	13238,83	431,712	2,32	5715,36
37	,00445	,42	,06	16691,06	544,287	1,84	9084,71
38	,003965	,34	,05	20854,65	686,511	1,46	14320,26
39	,003531	,27	,04	26302,23	865,046	1,16	22752,6
40	,003144	,21	,03	33175,94	1091,865	,92	36223,59

Improved Electric Annunciator.



Of the best construction and most elegant design, adapted for reliable operation, without repair, for years.

STYLE No. 1.

Handsome Black Walnut Carved Case, finely finished; all parts Nickel Plated, and wound with Silk Wire.—An ornament to any house.

For 4 rooms, or indications	-----	\$25 00
" 6 "	-----	31 00
" 8 "	-----	37 00
" 9 "	-----	40 00
" 10 "	-----	43 00
" 12 "	-----	49 00
" 15 "	-----	58 00

Special prices made on large Annunciators. Liberal discounts to agents and the trade.

STYLE No. 2.

With plain case. Metal parts not plated, but in general construction, the same as No. 1.

For 4 rooms	-----	\$17 00	For 15 rooms	-----	\$45 00
" 6 "	-----	20 00	" 20 "	-----	58 00
" 8 "	-----	25 00	30 to 50 rooms	-----	per drop, 2 50
" 10 "	-----	30 00			

STYLE No. 3.

A cheaper grade. Especially adapted to Offices, Kitchens, Mills and places where accuracy is all that is necessary.

For 4 rooms	-----	\$14 00	For 15 rooms	-----	\$38 00
" 6 "	-----	17 00	" 20 "	-----	50 00
" 8 "	-----	20 00	30 to 50 "	-----	per drop, 2 00
" 10 "	-----	25 00			

The best is the cheapest; and the following are a few of the reasons why we claim ours to be the best:

There is not a spring about the whole Annunciator.

Electricity and gravity are the only forces used in its working.

Requires minimum amount of battery.

Nothing to get out of order.

Taken in preference to all others.

Correspond with us before purchasing.

Burglar Alarm.

The most reliable. The best preventive against burglars.

No. 1, style for 4 rooms	-----	\$30 00	No. 1, style for 8 rooms	-----	\$47 00
No. 1, " " 6 "	-----	38 50	No. 1, " " 9 "	-----	51 25

The above is handsomely finished, Nickel-plated. We furnish a case to suit the wood-work of the house.

No. 2, style for 4 rooms	-----	\$25 00	No. 2, style for 8 rooms	-----	\$39 00
No. 2, " " 6 "	-----	31 00	No. 2, " " 9 "	-----	44 00

Our Burglar Alarms are continuous ringing, and can be so arranged as to light the gas at the time the burglar tries to raise a window or open a door.

Call Bells.

Magneto Bell.

Pony Magneto, without telephone attachment, requiring no battery;
for use instead of the ordinary Call Bell-----each, \$5 50

NO.	SIZE OF GONG.	BOX BELL.	SKELETON BELL.	TABLE BELL.
1	2½ in.	\$2 00	\$3 50	\$5 00
2	3 in.	2 50	3 75	6 00
3	4 in.	2 75	4 00	7 50
4	5 in.	4 50	4 25	9 00
5	5½ in.	5 00	4 75	9 50
6	6 in.	5 50	5 25	10 00

Buzzer.

In the Buzzer the vibration of the armature or the striking of the tap-
per against a sounding plate makes a very faint sound, which is all that is
desired in many cases.

Price, small size-----\$2 00

Electro Mechanical Gong.

6 inch Gong-----\$25 00 | 10 inch Gong-----\$30 00
8 " " ----- 28 00 | 12 " " ----- 35 00

The Le Clanche Battery is the one adopted, and generally used for this
work. For prices, see page 14. We furnish boxes for any number of cells,
made of any kind of wood desired.

Push Buttons.

Rosewood, finely finished-----each, \$0 40
Black Walnut, Cherry or Oak-----" 30
Mahogany-----" 40
Maple-----" 35
Bronze Enameled, fancy-----" 75
Bronze, plain-----" 60
Nickel-plated-----" 75
Brass-----" 60
Plain Metal Push Button-----" 25

The above Buttons are all well made of the best material.

Foot Push, stationary, to be fastened to floor-----\$0 75
" Movable, for Flexible Cord-----75
Pear Shaped Push Button-----75
Door Pulls, straight, Enameled Bronze-----2 25
" " " Plain-----2 00
" " Lever, Enameled,-----3 50
" " " Plain-----3 00
Nickel-plated Pulls 20 per cent, and Silver Plated 40 per cent advance.

Burglar Alarm Window Springs, (improved)-----	each, \$0 25
“ “ Door “ “-----	“ 30
Floor Groovers-----	“ 75
Elevator Cables, latest improved, any number of conductors, 3 cents per foot per wire.	
Thermostadts-----	each, \$1 50
Telephone Cords, Spiral, Worsted, single-----	“ 15
“ “ “ “ double-----	“ 25

Amateur's Outfit for Silver-Plating.

2 No. 1 Smee Batteries.....	\$6 00	1 Sand Brush.....	\$0 45
1 Extra Glass Cup.....	50	1 Fine Brush.....	45
2 Rods, 18 in. long, with connections, 1 00		3 Burnishers, assorted.....	3 00
2 ten foot Conducting Wires.....	20	1 Pound Hanging Wire.....	60
1 Book of Instructions.....	1 00	1 Box of Pumice Stone.....	25
1 Glass Funnel.....	65	1 “ Whiting.....	25
½ Pound Quicksilver.....	40	1 “ Rouge.....	50
1 Glass Rod.....	25	1 “ Crocus.....	25
1 Graduate Glass.....	60	1 Quart Silver Solution.....	2 50
1 Scratch Brush.....	1 00	1 Silver Anode.....	1 00
Complete Outfit.....		\$20 00	

Jeweler's Outfit for Gold and Silver-Plating.

In this set is included all that is necessary for a jeweler or watch repairer to start the business with. It comprises all the batteries, solutions, chemicals and apparatus that are required, with instructions, viz:

2 Two-quart Smee Batteries.	1 Box Ground Pumice Stone.
2 Two-quart Solution Dishes.	1 Box Whiting.
1 Stand, with Pan.	2 Connecting Cups.
1 Pint Cyanide Silver, with bottle.	1 Graduating Glass.
½ Pound Cyanide Potassa, with bottle.	2 Glass Rods, for stirring Solution.
1 Test Bottle Nitric Acid, with ground stopple.	1 Hand Brush.
½ Pound Mercury and bottle.	1 Burnisher.
1 Ounce Silver Plate and Wire.	1 Bottle of Crocus.
1 Copper Plate and Wire.	1 Piece of Chamois Leather.
4 Pennyweights Gold Plate and Wire.	1 Bottle of Rouge.
1 Scratch Brush.	1 Bottle of Gold Solution.
1 Lamp.	1 Blowpipe.
1 Soft Brush, for cleaning work.	1 Box and Thermometer.
Chamois Leather, for cleaning work.	1 Two-quart Bottle Silver Solution.

Price for the Complete Outfit.....\$40 00

Amateur's Nickel-Plating Outfit.

Consisting of one of our Nickel-plating Batteries, one Six-quart Square Glass Jar for Solution, Connecting Rods and Wire, Chemicals for two gallons of solution, and two Nickel Anodes.

Price, complete.....\$10 00

The Nickel Solutions for general use are made by dissolving about twelve ounces of our pure Nickel Salts to each gallon of hot water. Nickel Anodes about equal in surface to the articles to be plated should be used.

Electro-Plater's Supplies.

FOR NICKEL-PLATING.

Nickel Anodes, 2 x $3\frac{1}{4}$ inches.....	\$1 00
“ “ 2 x $4\frac{3}{4}$ “	1 25
“ “ $2\frac{1}{2}$ x 5 “	1 50
“ large, per lb.....	2 50
Nickel and Ammonia Sulphate (nickel salts) per lb.....	1 00
Composition for Polishing, per lb.....	20
Rouge, for Finishing.....	75

FOR SILVER AND GOLD PLATING.

Silver Anodes, per ounce.....	1 60
Gold Anodes, per dwt.....	1 40
Silver Nitrate, per ounce.....	1 25
“ Chloride “	1 65
“ Cyanide “	2 25
Gold Chloride, 15-grain bottle.....	1 00
Carbon Bi-sulphide, per lb.....	75
Plumbago, pure (electrotypers') per lb.....	1 00
Cyanide of Potash, 1-lb bottle.....	75
“ “ 10-lb. cans, per lb.....	70
Pumice Stone, per lb.....	10
Whiting, per lb.....	10
Chamois Skins, each.....	50
Oval Steel Burnisher, extra hard.....	1 00
“ “ slim.....	1 00
“ Bent Steel “	1 00
“ “ 1-inch blade.....	75
Blood Stone “ regular shapes.....	1 25
“ “ fancy “	\$3.00 to 6 00
Nicoud Steel “	50c., \$1.00 and 1 25
Stubs’ “ “	50c., 75c. and 1 00
American “ “ straight or bent.....	50
Handled Wire Scratch Brush.....	1 00
Jewelers’ End “ “	50c. to 75
“ Matting or Satin Finish Brush.....	50c. to 2 50
Satin Finish Star Brush.....	50c. to 75
Hand Scratch Brush.....	1 50
Jewelers’ Wheel Scratch Brush.....	50c. to 2 50
Platers’ and Silversmiths’ Scratch Brush.....	50c. to 5 00
Bristle Wheel Brush.....	25c. to 75
Wash-out Brush.....	20c. to 50
Bent Handled Brush.....	20c., 30c. and 50
Jewelers’ End Bristle Brush.....	15c., 20c. and 25
“ Bench “	20c., 25c. and 30
Felt Polishing Wheel.....	25c. to 3 00
“ “ extra large.....	\$3.00, \$4.00 and 8 00
Watch Case and Locket Buffs, Ring Buffs and Polishing Buffs of every description, of felt or walrus leather, to order.	
Bunsen Burner, nickel-plated, on iron stand.....	\$1 50
“ “ “ to screw on gas fixture.....	1 30
Flexible Rubber Gas Tube for Bunsen Burner, per foot.....	15

Magneto Blasting Machine.

Magneto Blasting Machine.....	\$25 00
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PLATINUM FUSES FOR MAGNETO MACHINE.

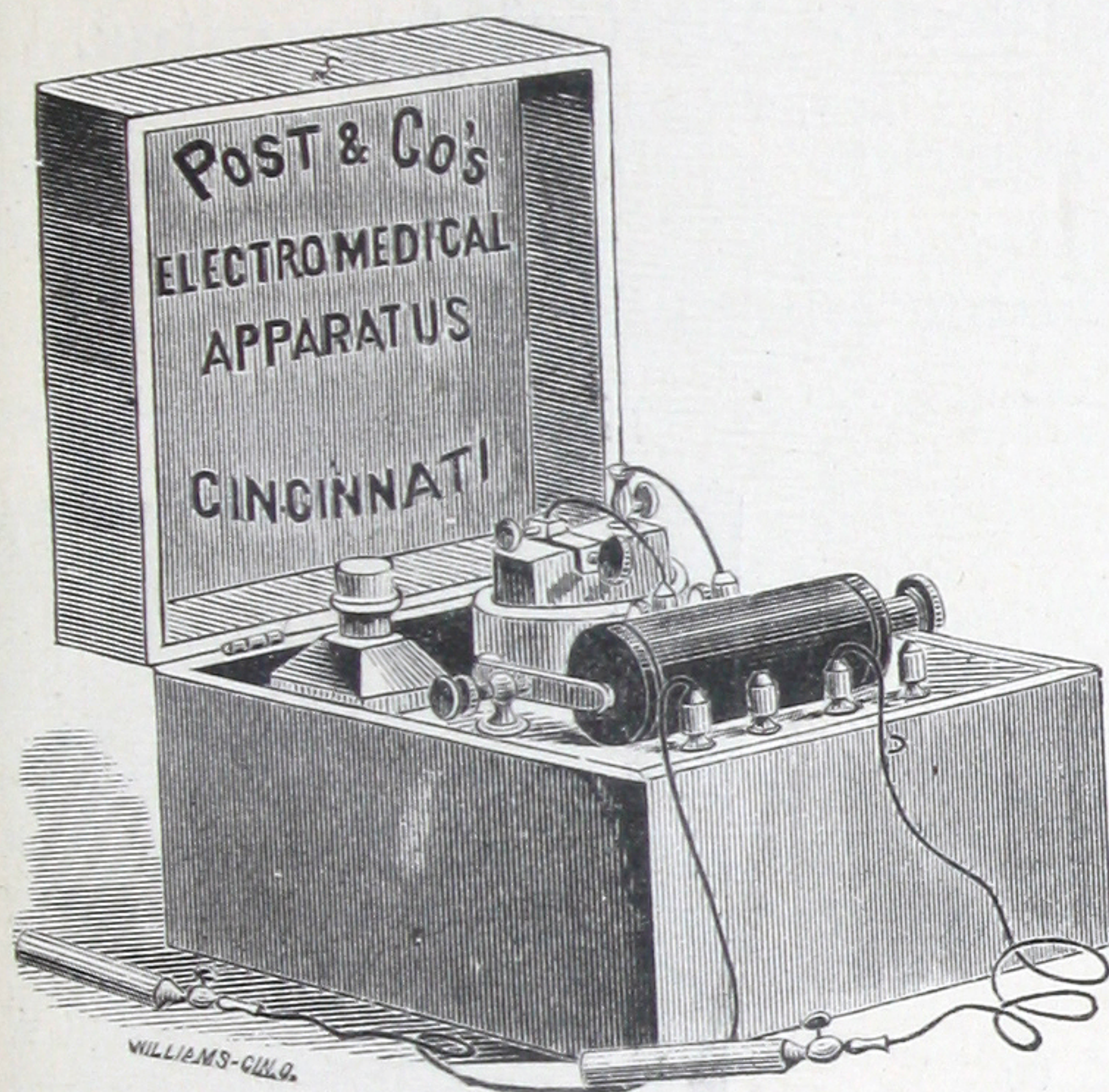
Cotton Covered, 4-foot wire, per hundred.....	\$4 00
“ “ 6 “ “ “	5 00
“ “ 8 “ “ “	6 00
Longer wires over 8 feet, one-half cent extra per foot.....	
Gutta-percha covered, 4-foot wires, per hundred.....	8 00
“ “ 6 “ “ “	11 00
“ “ 8 “ “ “	13 00
Longer wires, over 8 feet, two cents per foot extra.....	
Leading wire, No. 14, gutta-percha covered, per foot.....	04
“ “ “ 14, cotton braid and compound covered, per foot.....	02
Connecting wire, cotton covered, per lb.....	50
Illustrated Circular sent on application.	

Induction Coils.

	PRICE.
No. 1, With Automatic Break, giving $\frac{1}{8}$ inch spark-----	\$ 6 00
No. 2, Similar to No. 1, with Plain Commutator giving $\frac{1}{4}$ in. spark,-----	8 00
No. 3, With Automatic Break, new and improved Commutator, giving $\frac{2}{5}$ inch spark-----	12 00
No. 4, Similar to No. 3, giving $\frac{4}{5}$ inch spark-----	20 00
No. 5, " " No. 3, " $1\frac{1}{5}$ " "-----	35 00
No. 6, " " No. 3, " $1\frac{3}{5}$ " "-----	50 00
No. 7, " " No. 3, " $2\frac{2}{5}$ " "-----	75 00
No. 8, " " No. 3, " 4 " "-----	125 00

Medical Apparatus.

Our Electro Medical Apparatus.



Which we take pleasure in offering to the medical profession, and the public generally, as being beyond doubt the best and cheapest apparatus ever introduced. It is the best Electro Medical Apparatus for Therapeutic and Electropathic purposes ever desired. It is elegantly nickel-plated, and inclosed in a finely finished walnut box, with cords, handles and battery, with full instructions for use and application to almost every variety of diseases.

PRICE LIST OF APPARATUS AND APPLIANCES.

Apparatus, complete-----	\$16 00
Extra Battery, per cell, complete-----	2 00
" Zincs, per pair-----	50
" Platina Plate-----	1 00
" " " with Wood Binding Post-----	1 25
" Zinc Clamp-----	25
" Glass Jar-----	10
" Cords, with tips, per pair-----	50
" " without tips, per foot-----	05
" Handles, per pair-----	50
" Bottles, for Fluid-----	20
" Sponge Holder, fine finished wood, each-----	75

Holtz Machine.

No. 1, Toepler Holtz Machine, gives long and brilliant discharges; self-charging; works in all weathers; diameter of revolving plate 26 centimeters, equal to 10½ inches; giving 5-inch spark; mount- ed on finely polished base-----						\$25 00
Leyden Jar, 1 pint-----		\$1 50		Leyden Jar, 2 quarts-----		\$2 75
“ “ 1 quart-----		2 00		“ “ 1 gallon-----		3 25
Condenser, containing 75 square feet' tin foil-----						\$20 00
“ “ 100 “ “ “-----						22 00
“ “ 150 “ “ “-----						25 00
“ “ 200 “ “ “-----						30 00

Geissler Tubes.

We are prepared to furnish these Tubes, all varieties and shapes, at lowest prices. Write for quotations.

Gaiffe's Pocket Electro Medical Apparatus.

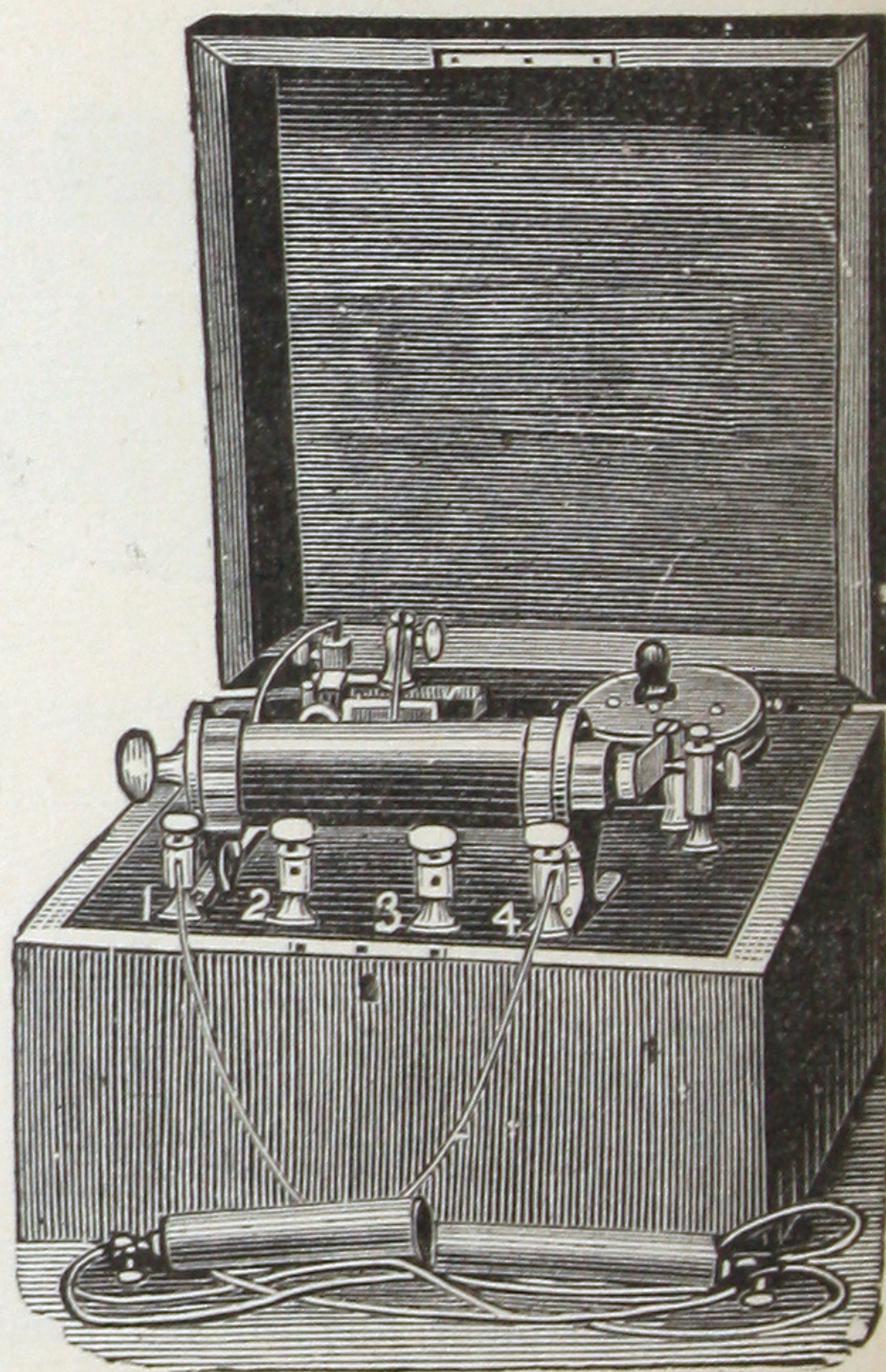
No. 1, Complete in case 7½ x 4 x 1½ inch, weighing 24 ozs.-----	\$10 00
No. 2, Smaller size, without Electrodes-----	9 00
Extra Zincs-----	40

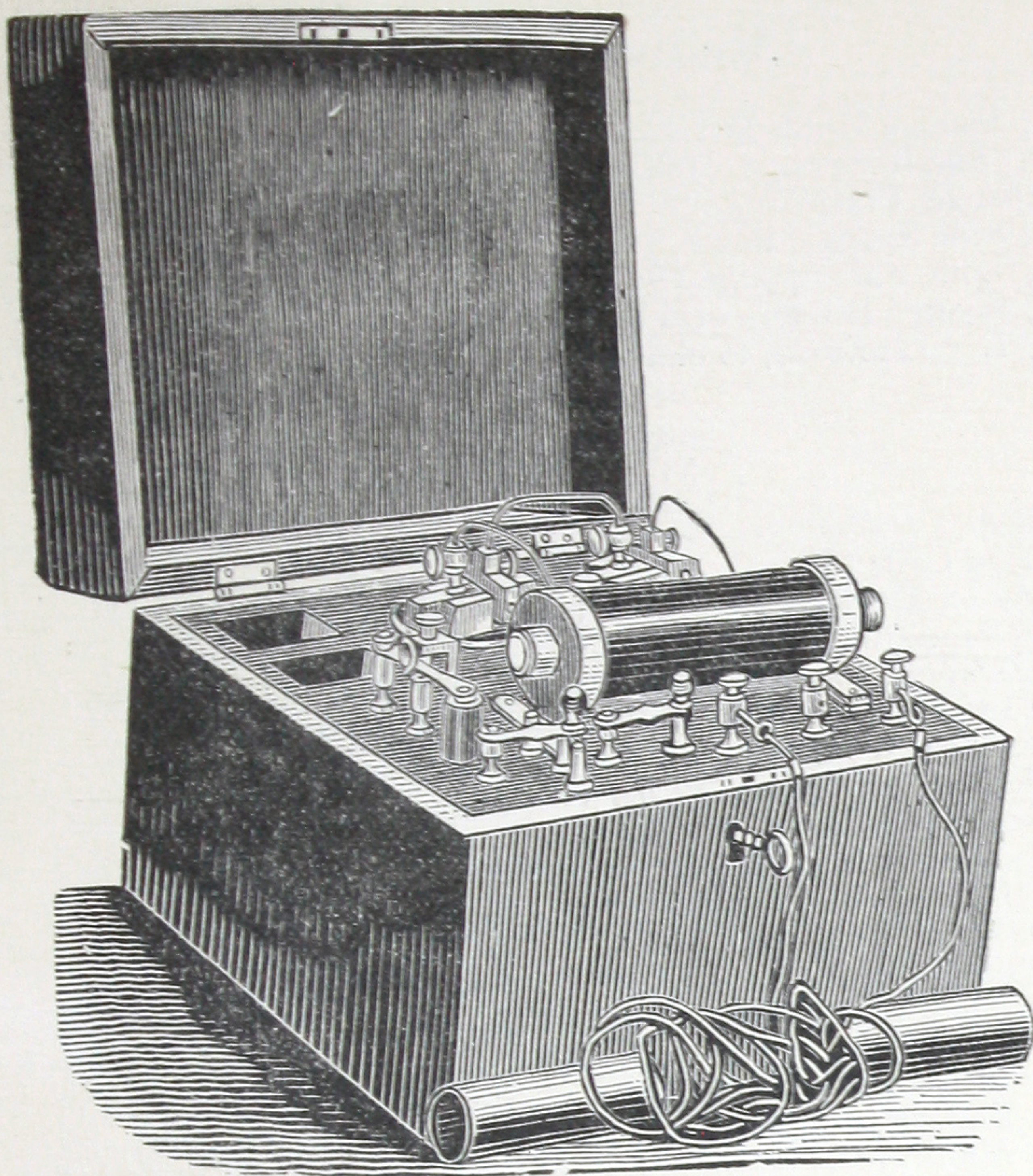
Kidder Machine.

Complete, in finely finished Case-----	\$8 00
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No. 1 Battery.

No. 1 Battery, price, comp. \$15 00	
Extra Zincs-----per pair,	50
Platina Plates-----each,	1 50
Glass Cells-----"	50
Conducting Cords, per pr.,	75





No. 2 Battery.

No. 2 Battery, price, complete	-----	\$25 00
Platina Plates	-----each,	1 50
Glass Cells	-----"	50
Conducting Cords	-----per pair,	75

Little Giant Pocket Medical Battery.

Complete, in case, 5 x 4 x 2 inches	-----	\$7 50
Battery Double Rubber Cell	-----	1 50
Electrodes, per pair	-----per pair,	1 00
Nickel-Plated Handles	-----"	50
Silk Cords, with Tips	-----"	25
Zincs	-----	15
Bisulphate of Mercury, per oz.	-----	

This Battery is complete in all its parts, and for all ordinary purposes is all that is necessary. We will make a special discount to parties purchasing these in lots of half dozen or more.

Medical Battery Parts.

No. 1, Sponge Holding Electrode -----	\$1 25
No. 2, Small Sponge Holding Electrode, Rosewood Handle, with Sponge Clasp-----	1 50
No. 3, Side Sponge, to use under a loose gown-----	1 75
No. 4, Long Side Sponge Holder, (length 14 inches) without sponge--	2 00
No. 5, Sponge Holder, with Interrupter-----	3 00
No. 6, Ear Electrode, to clasp small sponge-----	1 50

Books.

Telephone (<i>Dolbear</i>)-----	price, \$0 75
Induction Coils (<i>Dyer</i>)-----	" 60
Lectures on Electric Induction (<i>Gordon</i>)-----	" 80
Electro Metallurgy-----	" 2 50
The Galvanometer and its Uses (<i>Haskins</i>)-----	" 1 50
Useful Information on Practical Electric Lighting (<i>Higgs</i>) --	" 40
The Practical Application of the Electric Light (<i>Higgs</i>)-----	" 3 50
Electric Transmission of Power (<i>Higgs</i>)-----	" 1 20
Electricity and Magnetism (<i>Jenkins</i>)-----	" 1 50
The Modern Practice of Electric Telegraph (<i>Pope</i>)-----	" 2 00
Electricity and the Electric Telegraph (<i>Prescott</i>)-----	" 5 00
The Speaking Telephone, Electric Light, etc. (<i>Prescott</i>)-----	" 4 00
An Elementary Treatise on Electric Batteries (<i>Wiandet</i>)-----	" 2 50
Electric Lighting by Incandescence (<i>Sawyer</i>)-----	" 2 50
Light and Electricity (<i>Tyndall</i>)-----	" 1 25
Lessons in Electricity (<i>Tyndall</i>)-----	" 1 00
Electro-Plating (<i>Urquhart</i>)-----	" 2 00
Smith's Manual-----	" 30

Miscellaneous.

Machine and Wood Screws, all numbers and threads.	Wrenches.
Gas Lighting Burners and Coils.	Screw Plates, with Taps.
Sand Paper and Emery Cloth.	Twist Drills.
Nickel-plated Lamp for experimen- ter's room.	Chucks, Vises, etc.
Tape Lines.	Watchman's Time Detector.
Rules, all kinds.	Water Tank Alarm,
Taps and Dies.	Manifold Books and Paper.
	Styles—Bone, Agate and Steel.

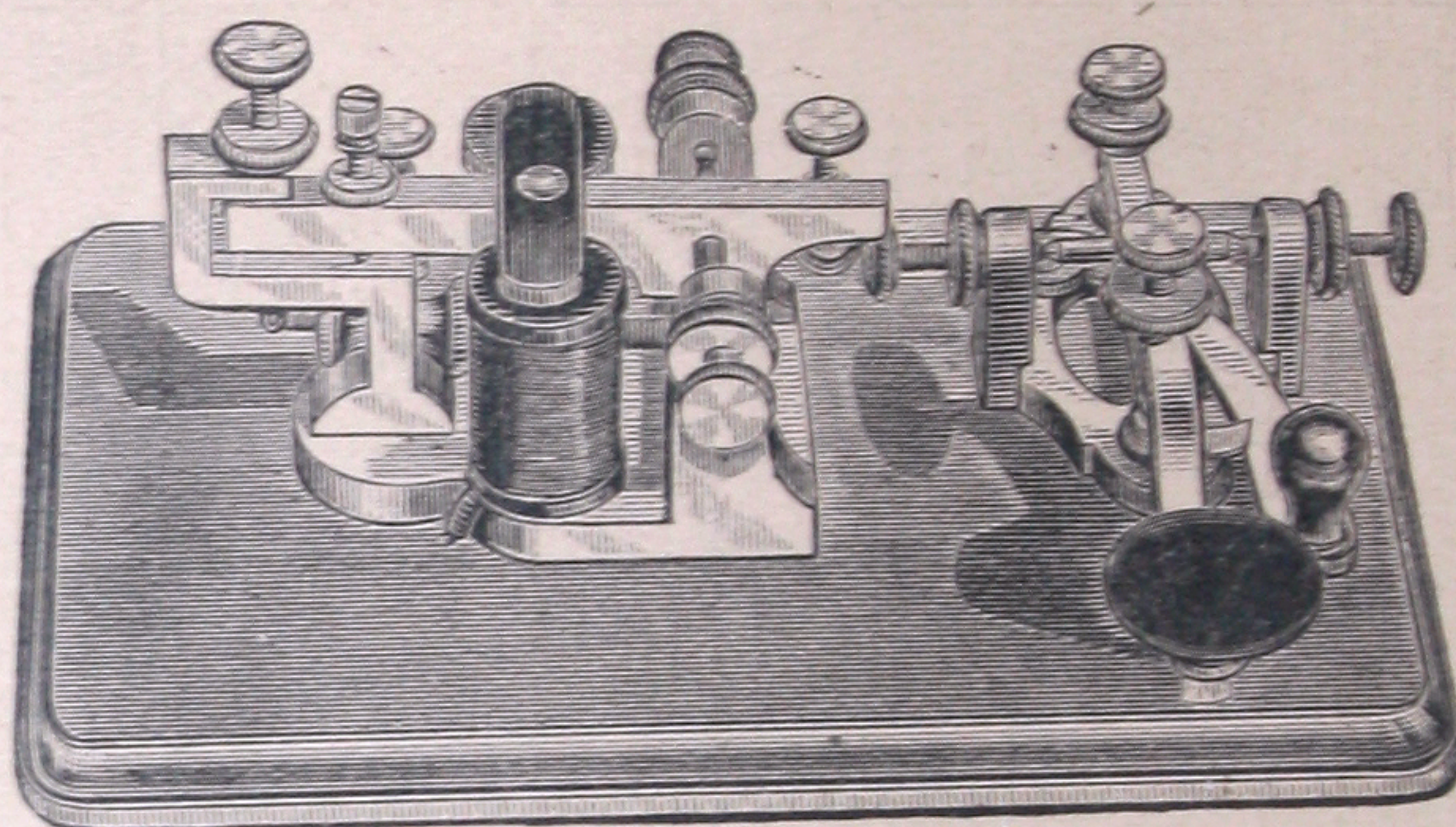
Magnet Wire.

Wound with Cotton or Silk—Covering firmly adhering to the wire.

AMERICAN OR BROWN & SHARPE'S GAUGE.

COTTON.			SILK.		
No.	Copper Magnet.	German Silver Resist.	No.	Copper Magnet.	German Silver Resist.
16	.60	1.42	16	1.12	1.85
17	.60	1.44	17	1.12	1.85
18	.60	1.52	18	1.15	1.85
19	.60	1.62	19	1.15	1.85
20	.60	1.71	20	1.18	1.88
21	.70	1.84	21	1.20	1.93
22	.76	2.05	22	1.30	2.06
23	.83	2.25	23	1.42	2.21
24	.90	2.45	24	1.56	2.37
25	1.00	2.60	25	1.81	2.65
26	1.10	2.84	26	2.10	3.02
27	1.25	3.09	27	2.25	3.23
28	1.35	3.59	28	2.38	3.42
29	1.50	3.96	29	2.75	3.85
30	1.65	----	30	2.95	4.14
31	1.80	----	31	3.25	4.52
32	1.95	----	32	3.45	4.94
33	2.40	----	33	3.90	5.46
34	2.85	----	34	4.10	5.84
35	3.25		35	5.20	7.52
36	4.37		36	5.85	10.00
37	6.75		37	11.00	18.50
38	9.00		38	13.00	28.00

For double winding, either with silk or cotton, we add the difference between price of bare and covered copper wire.



LEARNER'S TELEGRAPH INSTRUMENT. 3

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CCA